

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

March 1, 2004 ■ Volume 21, Number 9



PROFILING HACKERS

Hackers, crackers, carders and thieves have it in for your network, but knowing what makes them tick can lead to better security. Learn about the behavior patterns exhibited in actual attacks against a bank, online merchant and brokerage firm, and what countermeasures you should take to guard against such incidents. **Page 40**

Microsoft to make its software 'behave'

■ BY ELLEN MESSMER

SAN FRANCISCO — Microsoft's revelation last week that it is adopting a new approach to computer security dubbed "behavior blocking" represents a radical shift in the company's software design strategy that could pay off for attack-weary Windows users, industry watchers say.

Microsoft's embrace of behavior blocking — a technique for protecting applications and operating systems from worms and other attacks by recognizing when computers aren't acting like themselves — was one of several security initiatives outlined by the company and others at last week's RSA Conference. Behavior blocking, already **See RSA, page 12**

Doubts dog Microsoft spam plan

■ BY JOHN FONTANA, CARA GARRETSON AND ELLEN MESSMER

Even with Microsoft lending its clout to an expanding anti-spam movement centered on authenticating e-mail senders, experts caution the approach comes laden with technical challenges and unanswered questions.

The software giant last week published its Caller ID for E-mail specification, which lays out how to thwart the spoofing of e-mail addresses, a popular spammer

trick. The specification, which Microsoft hopes will become a standard, is the first piece of the company's long-term spam-fighting strategy called the Coordinated Spam Reduction Initiative (CSRI), which also was introduced last week at the annual RSA Conference in San Francisco.

Caller ID is one of several IP-based proposals addressing sender authentication, including efforts such as the Sender Policy Framework (SPF) launched by anti-spam researcher Meng Weng **See Spam, page 12**

It's a new domain-name game

■ BY CAROLYN DUFFY MARSAN

Touchstone Energy, an alliance of 600 user-owned electric utilities, is at the forefront of a trend toward businesses adopting spe-

cialized domain names to market their wares on the Web.

Touchstone Energy has switched its primary Web site from a domain name ending in the .com to a name ending in

.coop, which is reserved for companies that are owned by their customers. The .coop extension was one of several new top-level domains that became available two years ago.

"We're probably the most prevalent cooperative in the nation as it relates to broadcasting the difference of the cooperative business model," says COO Jim Bausell. "Switching to .coop in our URL was one more way to reinforce the difference between us and investor-owned utilities."

Touchstone Energy still owns its **See Domain names, page 14**

A Wider Net

Gamers get a league of their own

Even moms are asking for autographs from pros.

■ BY JULIE BORT

So your friends call you the Counter-Strike god — among them you're the undisputed champion of the anti-terrorist computer game. Ever think of going pro?

No joke. As the popularity of computer games such as Counter-Strike,

See Gamers, page 57



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The AVerMedia TVBox9 can connect a TV feed and an Xbox to any LCD monitor or PC. **Page 36.**



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NetworkWorld

Features

What are hackers thinking?: Understanding their behavior and motivations can lead to better network security. We analyzed three real cases — a digital break-in at a financial institution, the rooting of an e-commerce hosting provider and insider information theft — to identify the attack patterns and the countermeasures you can take to protect against them. **Page 40.**

CLEAR CHOICE



TEST

Secure shell software

Tectia 4.0 from SSH Communications Security provides convenient, secure file transfers. **Page 45.**

Face-Off:

What's better for your network: anti-spam appliances or anti-spam software? Two industry insiders square off. **Page 47.**

NetworkWorldFusion

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Exclusive

Audio primer: Basic wireless LAN security

In this primer, we look at some of the technologies and techniques used for securing a small office/home office WLAN network.

DocFinder: 9946

Foundry switch review exclusives

Head online to get the background on this week's review of Foundry's BigIron M68 switch, including test methodology, the performance chart and more. **DocFinder: 9947**

Interactive

Layer 8: Caption contest

See who won last week's caption contest and enter this week's at Fusion's not-just-networking Web log. Take a chance at glory — and a free prize.

DocFinder: 9652

Seminars and events

Messaging: From chaos to control

Messaging is in crisis. Ever-escalating e-mail assaults now threaten core competencies of even the most sophisticated corporations. It's time for better, more aggressive answers that again make messaging a corporate-safe application. The latest demos and new tools will be presented by industry expert and Network World Columnist Mark Gibbs. **DocFinder: 9876**

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Columnists

Wireless Wizards

Personal firewalls
Eric in New York wonders: "Is there a value to integrating personal firewalls into my wireless LAN?"

DocFinder: 9948

Telework Beat

Bottom-up telework
Net.Worker Managing Editor Toni Kistner outlines how the Telework Coalition is pushing to extend pre-tax savings plans to include telecommuting-related expenses.

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Digital Domicile

Is there hope for home NAS?
Columnist Mike Wolf says adoption numbers are abysmal, but Broadcom could help turn things around.

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Small Business Tech

Beating the rebate runaround, Part 4
Columnist James Gaskin talks to an insider who shares rebate secrets and offers a better way to get your money.

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News

Bits

VeriSign suit calls ICANN obstructionist

■ VeriSign last week filed a lawsuit against the Internet Corporation for Assigned Names and Numbers, accusing the organization of overstepping its authority and improperly attempting to regulate VeriSign's business. VeriSign alleges that ICANN, by straying from its charter and agreement to be a technical coordination body, has improperly attempted to become the "de facto regulator of the domain name system and in doing so stifled the introduction of new services that benefit Internet users and promote the growth of the Internet," VeriSign said. VeriSign accuses ICANN of dragging its feet on letting VeriSign offer new services such as a wait-list service for expired domain names and internationalized domain names in non-English characters, a VeriSign spokesman said. VeriSign also disputes ICANN's objections that forced it to take down its Site Finder Internet search service, said Tom Galvin, VeriSign's vice president of government relations. ICANN did not have an immediate response.

Oracle to fight DOJ over PeopleSoft

■ Oracle last week said it will "vigorously challenge" the Department of Justice's lawsuit seeking to block its attempted takeover of rival PeopleSoft. It also said it will withdraw the slate of nominees it put forward for election to PeopleSoft's board at the company's upcoming shareholder meeting. The Justice Department indicated earlier it was likely to object to the deal, and Oracle's decision to battle the agency in court came as no surprise to many. Its move to drop its push for seats on PeopleSoft's board was a more unexpected twist.

IBM to Sun: Put up or . . .

■ IBM and Sun have a new favorite weapon in the public wrangling over Java development leadership: the open letter. IBM's Rod Smith, vice president of emerging technologies

"Sure, it's safe. See, as long as you keep one foot on the ground, you're never in danger of tipping over."

Layer 8

Douglas Lancaster of British Columbia is the latest winner of our weekly photo contest. He's earned our respect, +3 intelligence and a fabulous prize off the bottom shelf of our marketing closet. Check out Layer 8 every Monday for the latest contest photo and use your wit for good instead of evil. www.nwfusion.com/weblogs/layer8/



The Good The Bad The Ugly



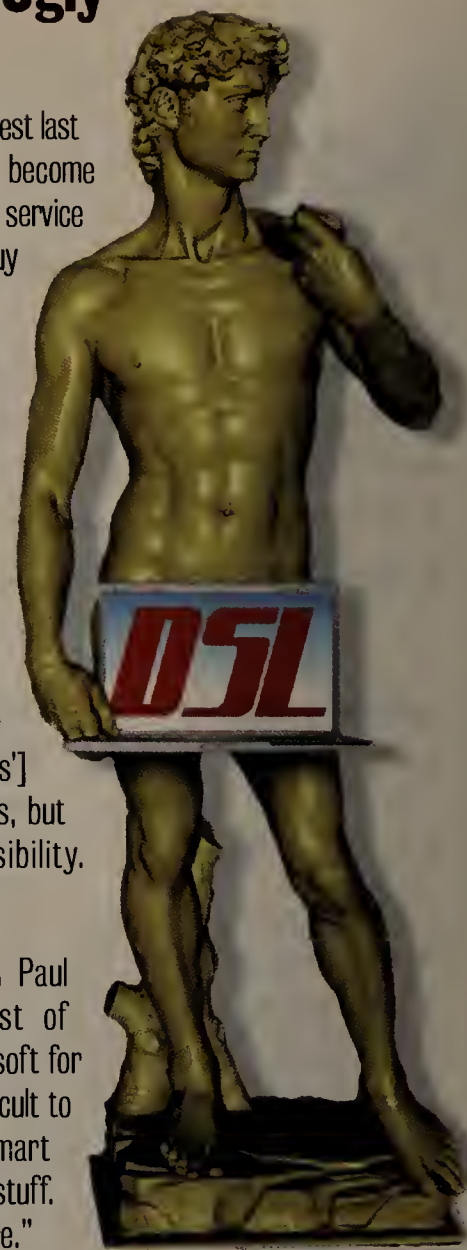
The bare facts on DSL. Qwest last week broke rank with the other RBOCs to become the first to offer "Naked DSL," that is, DSL service that doesn't require the customer to also buy regular phone service. ➤



Taking responsibility. Talk about bad blood. Here's what David Sutphen, the Recording Industry Association of America's vice president for government relations, had to say to peer-to-peer software vendors last week: "It's our responsibility to protect our stuff by putting digital rights management on it, it's IT's responsibility to put something in their software, it's [consumer electronics companies'] responsibility to put something in devices, but you guys don't have any responsibility. that's fundamentally wrong."



Security for dummies. Paul Kocher, president and chief scientist of Cryptography Research, chastised Microsoft for making its latest security efforts too difficult to implement: "As a species, we're not smart enough to handle the complexity of this stuff. You have to get the complexity out of there."



for the company's software group, fired off the latest salvo last week, jumping on Sun technology evangelist Simon Phipps' suggestion at the recent EclipseCon that IBM give its Java implementation to the open source community. IBM has for years encouraged Sun to open source Java, and Smith took advantage of Phipps' comment to again push that agenda. "Here is the offer: IBM would like to work with Sun on an independent project to open source Java," he wrote. "IBM is ready to provide technical resources and code for the open source Java implementation while Sun provides the open source community with Sun materials, including Java specifications, tests and code." Sun did not have an immediate response to IBM's tossed gauntlet. The company fired off its own open letter on Java development recently, when it reiterated its decision not to join the IBM-backed development efforts around the Eclipse open source platform.

Microsoft mulling pre-Longhorn release

■ Microsoft is pondering ways to add features to Windows XP after the release of Service Pack 2 later this year. The discussions, under the project name Windows XP Reloaded, could result in an interim release of Windows before Longhorn. Such a release would represent a strategy change for Microsoft, but not an entirely unexpected one. Gartner analysts have predicted that Microsoft would offer an interim release of Windows to placate customers who signed up for its Software Assurance licensing program, which provides three-year contracts for software maintenance and upgrades. "We're looking at what our options are in terms of delivering what our development team creates in terms of new technologies to our customers," says Greg Sullivan, a Microsoft product manager. "This is not an announcement of a second edition of Windows XP. There is a range of options."

AT&T paints Wall Street a rosy picture

■ AT&T last week reinforced its message of reducing costs while fighting to keep customers at the carrier's first financial analyst meeting in three years. AT&T Chairman and CEO David Dorman opened the day by promoting the carrier's successes in process remediation, reducing complexity and costs in its network by decommissioning 160 legacy systems and further head count reductions for 2004. Like most carriers, it is struggling to turn around revenue declines by improving internal operations. But last month when AT&T announced its fourth-quarter earnings, it was clear that AT&T also was losing business customers. Bill Hannigan, who took the reins as president in December, says the carrier is

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Shop talk: Factories embracing IP

Manufacturing conference highlights networking's role in linking factories, back-end systems.

■ BY PHIL HOCHMUTH

CHICAGO — Manufacturing companies are IP-enabling their shops to pull real-time data off the factory floor and into back-end databases and ERP systems. These firms say the goal is to drive productivity and increase customer satisfaction, while lowering the costs of network downtime and waste.

Myriad technologies — such as industrial Ethernet, 802.11 and radio frequency identification (RFID) — were on display last week at the National Manufacturing Week show to tackle those issues. Also on tap were new software packages for making better use of data collected from plants and factories.

"One of our major drivers is to take data from the infrastructure and relate it to the business process in order to lower costs," said Greg Catalano, senior staff consultant at Boise Cascade, an Idaho manufacturer of paper, timber and plywood products.

Boise Cascade uses a wired and wireless Ethernet setup to communicate product status and machine performance data with corporate database, ERP and supply-chain management systems.

The company is installing wired Ethernet and wireless 802.11-based products from Enterasys Networks in its plants. The wired gear lets data be collected directly from factory equipment as products are made. The wireless LAN (WLAN) lets workers with Wi-Fi-enabled tablet PCs do real-time inventory and plant-control tasks in the factories.

Linking manufacturing equipment to the data center lets the company track inventory more effectively, keeping customers happier.

Data collected from the production and wireless inventory systems is sent to the company's PeopleSoft ERP system and Oracle database applications. Web extranet software lets customers track orders from the gluing-together of plywood to truck delivery.

"If we don't get timber and plywood in on time to The Home Depots and Lowes of the world, there'll be a backlash," Catalano said. "They'll just go to the competitors."

"Manufacturers are very concerned about the ability to com-

municate status in real time," says Robert Parker, vice president and manufacturing industry strategist for AMR Research. To that end they are spending more money.

Two-thirds of large manufacturers say they plan to increase their technology budgets this year, according to an AMR survey. The firm also predicts that manufacturers' enterprise application spending will rise 9% this year.

Large manufacturers fueling this drive include General Motors, which last fall announced a plan to convert all its machine controllers, robots and process-control equipment to Ethernet/Industrial Protocol, a developing standard for controlling traditionally proprietary-based manufac-

ture. RFID scanner, a handheld scanning device that can read RFID tags or write new data to tags.

PeopleSoft also launched software to help manufacturers utilize and manage RFID data. The modules for its EnterpriseOne ERP software let users create PeopleSoft systems that produce and track RFID tags with customized product, origin-location and transaction-time data.

Cisco announced a product package aimed at manufacturers, based on versions of its Catalyst 2900 switches and Aironet Wi-Fi access points, modified to withstand extreme heat and dust on factory floors.

Also displaying new products was Wago Systems, which makes

cardboard and packaging materials. Since the mid-1990s, the firm has used an Internet-based, paperless purchase-order and work-scheduling system based on software produced in-house.

Recently, the company upgraded to Cisco switches, routers, wireless and VoIP gear in its plants in Chicago, Alabama and Wisconsin for real-time plant monitoring and remote-access support.

The company uses a centralized Cisco CallManager IP PBX to run the phone system in its factories over a VPN. This secure WAN also lets the company centralize all its data center applications, plant monitoring applications and IP video monitoring.

"We were able to open new plants more efficiently [in Alabama and Wisconsin] because we didn't have to provide the overhead of a phone system or payroll or accounting systems," said Dave Pung, director of information services at Corrugated Supply.

Ethernet switches and WLANs on the factory floors feed data from corrugation machines into the data center. Software transforms the data into real-time reports, delivered to customers over the Web. Managers in the plants also use Cisco wireless IP phones to stay connected while roaming the facilities.

The VPN also lets the company's supplier of industrial corrugation equipment — Fosber, an Italian firm — securely access machines.

"They can come right in over the VPN and do upgrades and maintenance" on the machines, which is a lot less expensive than paying someone to come from Europe, Pung said.

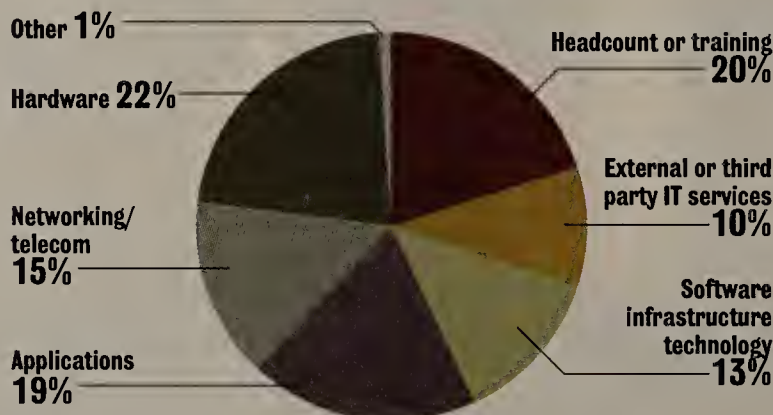
At Boise Cascade, remote monitoring of machinery over an IP network is also a valuable capability.

"Another major goal is to figure out how to reduce waste" associated with paper production, Catalano said. Collecting data from paper-production machines lets the company analyze performance statistics and calculate how to run the machines more efficiently. This analysis also lets the firm predict possible failures in machines and do predictive maintenance.

"These are billion-dollar machines," Catalano said. "If one goes down, it's about \$100,000 per hour of cost." ■

Where IT goes

Manufacturers are expected to spend more than a third of their IT budgets maintaining and upgrading network and data center hardware this year.



SOURCE: AMR RESEARCH

turing equipment via standard network technology.

"We wanted an Ethernet implementation that is open, readily available, capable of real-time data delivery and uses standard infrastructure devices," said Gary Workman, staff development engineer at GM, in a statement.

Product sampler

Products at the National Manufacturing Week show for linking factory floor networks included familiar names and some industry niche companies offering industrial Ethernet switches.

RFID vendor Intermec announced the CV60, a Windows-based mobile computer that can connect to an 802.11-based network and read RFID tag data from equipment and inventory. The PC also supports Bluetooth, letting it download data and print wirelessly. The firm also announced the IP

products that convert communications from programmable logic controllers (PLC) — devices that run industrial equipment — into Ethernet signals. Wago showed an eight-port hardened Ethernet switch with built-in conversion technology for transporting Fieldbus protocol traffic — a legacy manufacturing protocol — over Layer 2 Ethernet.

B&B Electronics announced Wi-Fi conversion devices that can plug into serial ports on PLCs. This lets factory staff wirelessly control industrial equipment that might only have been accessible from a console or workstation attached to the machine. The company says its converters can be configured in a wireless mesh, allowing access to nodes across a large factory area.

Using IP networking in factories is nothing new at Corrugated Supply, a Chicago producer of

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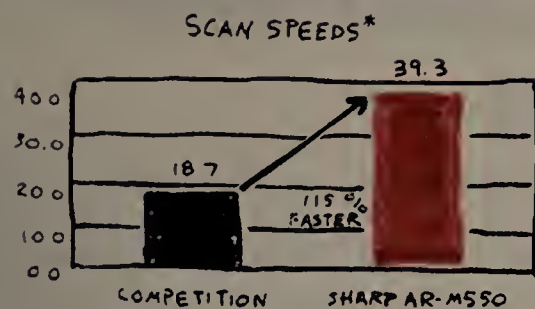
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CLEAR CHOICE



EXCLUSIVE

TEST

Foundry Networks' Big Iron MG8

A true 10G Ethernet switch, but failover tests raise resiliency issues

■ BY DAVID NEWMAN, NETWORK WORLD LAB ALLIANCE

In an exclusive *Network World* lab test, Foundry Networks' BigIron MG8 switch proved to be one of only two enterprise backbone switches to deliver wire-rate throughput on all interfaces of its 10G Ethernet line cards. Plus it's the only one to do so with minimal delay and jitter.

The MG8, which includes not only 10G Ethernet interfaces but also a new 40-port Gigabit Ethernet blade, also demonstrated first-rate, quality-of-service (QoS) enforcement capabilities.

However, while the MG8 lives up to its "Mucho Grande" moniker in terms of raw horsepower and traffic control, the late beta version Foundry supplied of its new 40-port Gigabit Ethernet line card has a few performance kinks. More seriously, in our failover tests while the MG8 rerouted one flow very fast, recovery times might increase along with flow counts.

The vendor says a firmware upgrade due next month will improve performance on its 40-port card. Foundry also says a larger switch/router — the NetIron 40G — will address the failover issue. Late next month we plan to test the upgraded 40-port card and the 40G chassis.

We used Spirent's SmartBits to measure the MG8's throughput and delay — the same way we've tested 10G switches in the past (see www.nwfusion.com,

DocFinders: 9937 and 9938) — in four configurations:

- A pure 10G Ethernet setup with four interfaces.

- Between groups of Gigabit Ethernet interfaces exchanging traffic across a 10G Ethernet backbone.

- Within the 40-port Gigabit Ethernet line card.

- Between the 40-port card and four 10G Ethernet interfaces (see How we did it, DocFinder: 9939).

Foundry's best results came during the pure 10G Ethernet tests. The four-port 10G Ethernet module handled small, midsize and large frames at full 10-Gigabit line rate with zero loss (see the throughput graph at DocFinder: 9940).

The MG8 also delivered line-rate performance in our basic backbone test. This configuration tests 10G Ethernet the way it's most likely to be used — as an aggregation technology for multiple Gigabit Ethernet links.

However, results were less than perfect in tests of Foundry's 40-port Gigabit Ethernet line card. The late beta version we tested forwarded 64-byte frames at line rate, but dropped 256- and 1,518-byte frames in some tests.

In our 40-port full-mesh tests, the card delivered line-rate throughput with short frames, but throughput with 256-byte frames was equivalent to 96.9% of line rate. When handling 1,518-byte frames, the MG8's new Gigabit Ethernet blade maxed out at 83% of line rate.

In tests where the 40-port Gigabit Ethernet card exchanged traffic with four 10G Ethernet interfaces — which demonstrates how the switch will perform as part of a 10G Ethernet backbone — the MG8 forwarded 64- and 256-byte frames at line rate. Throughput for 1,518-byte frames fell to the equivalent of 40.2% of line rate.

The MG8 put up impressive delay and jitter numbers, meaning delays will

not affect application performance.

In the pure 10G Ethernet tests, the MG8 introduced delay of between 6.8 and 13.9 microsec, depending on frame length (see delay graph, DocFinder 9941). That's comparable to those for Cisco's 10G Ethernet blade.

However, because of a configuration error on our part, we threw 10 times as much traffic

at Foundry's switch as Cisco's when measuring latency. Even under these conditions, the MG8 kept delay low and consistent. Jitter (delay variation) was a maximum of 2.5 microsec.

In delay tests of Gigabit Ethernet across a 10G Ethernet backbone, a pair of MG8s held up frames anywhere from 18.4 to 60.2 microsec for short and long frames, respectively.

Within a single 40-port blade, average delay ranged from 7.8 to 24.6 microsec. When moving traffic between the 40-port blade and 10G Ethernet interfaces, delay ranged from 9.3 to 20 microsec.

Failover foibles

Our failover tests measure the MG8's ability to move traffic onto a secondary link when a primary link fails. Because availability trumps performance for many network professionals, this was an important test.

Things began well enough. We measured failover of a single flow using three technologies, and in all cases the switch redirected traffic in 34 msec or less. That's better than Foundry's first-generation product, and slightly faster than single-flow numbers for Cisco's Catalyst 6500.

However, single-flow measurements aren't terribly meaningful in an enterprise context, where huge numbers of flows might be involved. We found that Cisco Catalyst 6500 failover times for 1 million flows were similar to those for

one flow.

We could not test the MG8 this way because it cannot hold a routing table with 1 million entries. That's hardly a fatal flaw given that routing tables even at large companies are more on the order of 1,000 entries. But we were unable to run our test even with 1,000 entries. The MG8's design requires a new entry in its Layer 2 forwarding table every time there's a change in a flow's Layer-3 routing information. Because the MG8 cannot forward traffic without a table entry, failover time increases with the number of flows being failed over.

Large numbers of routes can disappear from a backbone switch/router for reasons beyond a corporation's control, such as an Internet route flap. In such situations, flow-based designs such as the MG8's will take longer to reroute traffic than devices that "prepopulate" the forwarding database as they learn routes.

Foundry says failover times haven't been a problem even for its large enterprise customers.

Our QoS tests assessed the MG8's ability to perform two types of prioritization at once. The goal was to see if the MG8 could protect the high-priority traffic while simultaneously limiting low-priority traffic to no more than 2G bit/sec. The MG8 met both QoS goals.

Newman is president of Network Test, an independent benchmarking and network design consultancy in Westlake Village, Calif. He can be reached at dnewman@networktest.com.



Foundry BigIron MG8

Net Results

BigIron MG8

OVERALL RATING
3.85

Company: Foundry Networks, www.foundrynetworks.com **Cost:** \$182,260 as tested. **Pros:** 10G cards have line-rate throughput and low latency; excellent QoS enforcement. **Cons:** Scalability issues with failover; 40-port 1G cards are blocking.

The breakdown

10G Ethernet performance 25%	5
Gigabit Ethernet performance over 10G backbone 25%	3
QoS enforcement 25%	5
Failover 15%	1
Features 10%	4.5
TOTAL SCORE	3.85

Scoring Key: 5: Exceptional; 4: Very good; 3: Average; 2: Below average; 1: Consistently subpar

Thanks

Network World gratefully acknowledges the vendors that supported this project. Spirent Communications supplied its SmartBits traffic generator/analyzer system, including XLW-3721 10G Ethernet cards and LAN-3325 TeraMetrics XD 10/100/1000 Ethernet cards. Brooks Hickman of Spirent's advanced test program also helped debug test scripts. Thanks also to Siemon, which supplied all single- and multimode fiber cabling.

Compellent rolls out packaged storage array

■ BY DENI CONNOR

Start-up Compellent launched a modular storage array last week that features integrated replication, provisioning, virtualization and data-recovery software that lets users license and turn on the components as they need them.

The company introduced Storage Center, a Fibre Channel, SCSI or Serial ATA array

that links to Windows, Linux, NetWare and Unix servers and scales from one-half terabyte to more than 500 terabytes. Storage Center comes integrated with a number of applications including:

- Dynamic Capacity, which lets users allocate space when data is physically stored.
- Dynamic Progression, a package that automatically moves data between different

See Compellent, page 57

PROFILE: COMPELLENT

Headquarters:	Eden Prairie, Minn.
Founded:	March 2002
Primary product:	Storage Center modular storage array
Management team:	CEO Phil Soran, COO John Guider and CTO Larry Aszmann, all formerly with Xiotech.
Funding:	\$23 million from Cargil Ventures, Crescendo Ventures and El Dorado Ventures.
Fun fact:	Company name is a combination of the words "compelling" and "excellent."

Alcatel debuts wireless gear

■ BY JOHN COX

Alcatel this week plans to round out its enterprise network product line with wireless LAN and voice products.

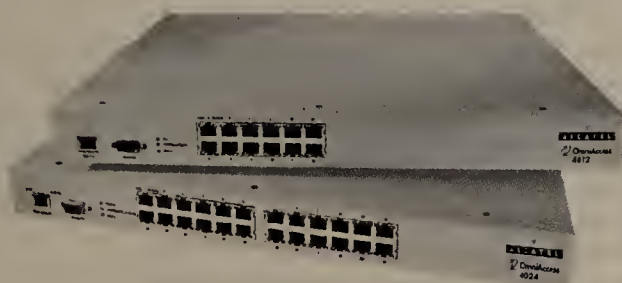
The hardware is based largely on third-party products that have been integrated with Alcatel's network management, security and IP PBX offerings.

"They're not going to stomp on the WLAN market [with these offerings]," says Joel Conover, principal analyst for enterprise infrastructure at Current Analysis. "The real key is that they couldn't sell on an end-to-end basis without that wireless component."

The new offerings are rebranded WLAN switches and access points from Airespace, and WLAN VoIP phone handsets from Spectralink.

WLAN products include the OmniAccess 1200 thin access points, which can support either an 802.11b/g or 802.11a/b/g radio. They plug into 12- or 24-port OmniAccess WLAN switches, which mount in wiring closets, or into spare Ethernet LAN ports, and then use a tunneling protocol over the IP net to reach an OmniAccess 4102, a rack-mounted appliance for data centers.

A management package called the OmniVista Air Control System relies heavily on Airespace's radio frequency management software. Among other things, it auto-



Alcatel's new OmniAccess 4000 wireless LAN switches, based on the Airespace products, link with Alcatel's network management and security offerings and its IP voice products.

matically can adjust the channel assignments and power levels of the radios in the access points.

The switches support a range of wireless security protocols and standards, such as having the necessary processing power to support an expected 2004 upgrade to the IEEE 802.11i security standard.

This summer, Alcatel plans to ship two voice-over-WLAN handsets: the Mobile IP Touch 300 for typical office settings; and a rugged version, the IPTouch 600, for industrial and similar settings.

"They're way out in front of the enterprise market with this wireless convergence," Conover says. "Most enterprises are moving toward convergence [of voice and data] and then wireless."

The OmniAccess 4000 series WLAN switches start at \$8,250 (the appliance version starts at \$13,685); the access points start at \$400. ■

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Computer Associates®

Spam

continued from page 1

Wong, and the Lightweight MTI Authentication Protocol (LMAP) under development at the IETF.

The unifying premise of these efforts is simple: Authenticate the sender of an e-mail using DNS as a way to thwart spammers. Spam-filtering providers such as Brightmail and Postini use proprietary technology to authenticate senders. Yahoo has developed an authentication scheme using digital signatures called DomainKeys.

But deploying a standard mechanism for the Internet is not without potential problems. These challenges include the potential for hits on network performance associated with checking every e-mail and the need for almost universal adoption. And there are also technical challenges related to modifications to mail headers and DNS, the Internet's database that routes e-mail and locates Web pages.

"It makes sense; it's the right way to think about using DNS," says Paul Mockapetris, who created DNS 20 years ago and is now the chief scientist and chairman of IP address-management software vendor Nominum. Technologies such as radio frequency identification (RFID) and Enum, the international electronic numbering domain system, also use DNS for similar look-ups.

"One thing is ominous, however," says Mockapetris, who has been touting DNS as a building block for these new technologies. "More people are putting more things in DNS and it increases the chances people will try to screw with you by corrupting your DNS server." He says that makes DNS Security, which has been a work

in progress at the IETF for 10 years, that much more critical.

To underscore the challenges presented in creating a standard for authentication of e-mail senders, the IETF had no luck with six other specifications that addressed the issue. But interest is high, with more than 8,000 companies testing or having implemented SPF alone, including AltaVista, Amazon.com, AOL, Google, SAP and Sendmail. "We've just started testing SPF; we're in an experimental phase and we're only using it on outbound e-mail," says AOL spokesman Nicholas Graham. "We're aware of Microsoft's Caller ID proposal and welcome it."

Sendmail and Amazon.com also are backing Caller ID. Sendmail plans to add support into its open source and commercial message transfer agents, and Amazon.com plans to add it to its messaging servers.

Microsoft added support for Caller ID in its Hotmail e-mail service last week and plans to support an enterprise implementation as part of a new Simple Mail Transfer Protocol gateway set for beta testing in May.

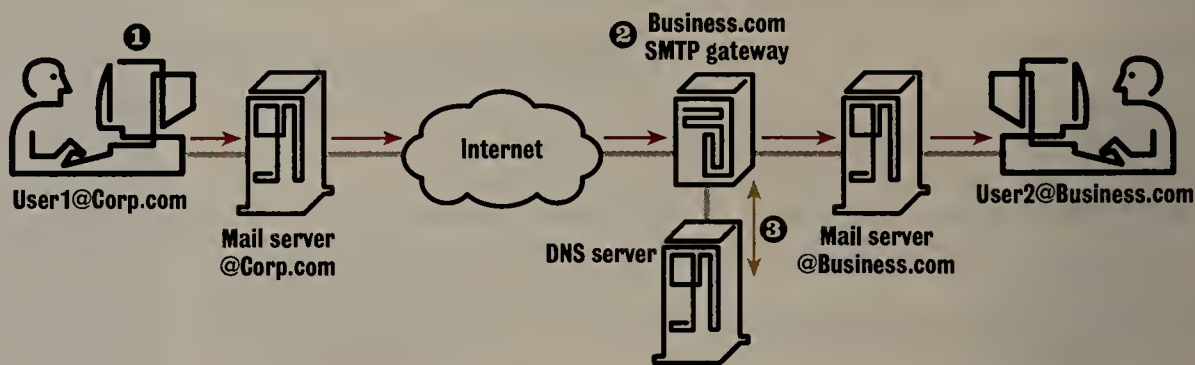
Microsoft's Caller ID specification, like SPF, works by having companies register the IP addresses of their outgoing e-mail servers in DNS. Currently, only the e-mail servers that accept incoming mail are registered in DNS. With Caller ID, a recipient's e-mail system would verify through DNS if the IP address used in the e-mail header of a message corresponds with an authorized server in the domain used in the sender's message.

However, using DNS requires companies to rewrite TXT files within their DNS servers to carry the XML-based Caller ID lists of outgoing e-mail servers. Some observers debate whether the verbose nature of XML will cause problems for DNS. There also are performance and scalability issues with Caller ID because each e-mail has to be opened by the receiving e-mail system so the header can be read. The issue is unique to Caller ID because SPF reads only the e-mail address in the message and doesn't require opening the message or even downloading it.

Ron Moritz, chief security strategist at Computer Associates, says widespread use of DNS look-up would likely create additional CPU processing demands on mail servers. "Mail is store and forward, and any process that changes this changes the SMTP

How it would work

Microsoft last week laid out a concept for an e-mail authentication service called **Caller ID for E-Mail**, which it says would eliminate domain spoofing and reduce spam.



1 User1@Corp.com sends e-mail to User2@Business.com.

2 The Business.com SMTP gateway supporting Caller ID for E-mail determines the purported responsible domain for sending the message, Corp.com, which has registered the IP addresses of its outgoing mail servers in the DNS.*

3 The SMTP gateway queries the DNS for the list of outbound e-mail servers at Corp.com and checks whether the IP address on the message matches an IP address listed in DNS. If no match is found, the message has most likely been spoofed and is dropped. If a match is found, the message is delivered to User2@Business.com.

*DNS is the global distributed database that provides numerical IP addresses and other information about Internet domains.

standard," he says. "Anything that disrupts the flow of mail could be a challenge."

In addition to other DNS concerns, users would have to be aware of the "time-to-live" settings on locally cached DNS records, which could complicate the addition or removal of mail servers from the network.

Other technical issues revolve around how mail is delivered, especially services that forward e-mail, such as Pobox.com, where SPF co-author Wong is president and CTO. Forwarding services would have to support mechanisms for adding the original sender's IP address in the message header. There are similar issues for mobile users, mailing lists, Web mail and outsourced mail.

"[Caller ID] would require a lot of changes. But it would work for spam," says David Houser, security architect at Nationwide Mutual Life Insurance Company in Col-

umbus, Ohio.

"The deployment issues don't seem huge. The big issue will be developing critical mass and that is a political issue," says Rand Wacker, director of product strategy and planning for Sendmail, which develops open source and commercial message transfer agents that handle almost 75% of all e-mail traffic.

Others say the time it will take to reach that mass could greatly deter adoption.

"Spam is an issue today and there is good filtering available today," says Andrew Lochart, director of product marketing for

Postini. "Caller ID sounds good until you look at the fine print, and then people ask how long will this take to deploy?"

Still others think Microsoft's plan lacks innovation and reveals ulterior motives.

"What Microsoft is doing is nothing revolutionary," says James Kobelius, analyst with Burton Group. "It's reverse DNS checking. Everybody does it."

He says Microsoft is playing catch-up but now wants to sell [messaging] products to the ISPs by having a stronger anti-spam product that contains anti-spoofing features. ■

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RSA

continued from page 1

available from Cisco, Network Associates and others, is seen as complementing signature-based anti-virus tools.

Bill Gates, Microsoft's chairman and chief software architect, outlined the "active protection technology" effort during a keynote address.

"You can really think of this as taking the notion of secure-by-default to the next level," said Gates, who along with other Microsoft executives has been talking tough about security for the past two years under an initiative called Trustworthy Computing. "The system will truly know what actions are allowed for operating-system components and the applications that are running."

He described how it could help prevent the spread of worms that take advantage of unpatched vulnerabilities in Microsoft applications. "For example, the Blaster worm caused the RPC service to open a back door and download some malicious code on the machine. In this case, behavior blocking would recognize that this behavior is out of the ordinary for the RPC service and block it," he said.

Gates offered little detail about how or when the new technology would show up in products. But analysts say they expect the technology, obtained in part through Microsoft's acquisition last year of start-up Pelican Security, will be in Windows client and server software by year-end. Microsoft sources confirmed that is the goal.

Gartner analyst John Pescatore says Microsoft's effort to safeguard Windows networks via behavior blocking runs counter to the company's traditional way of designing software, which "was always about making things easier for the user." That approach has led to more than

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RSA

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its fair share of holes.

"To Microsoft, it's been foreign culture to try and stop anything," he says.

The biggest challenge in behavior-blocking software is making sure it doesn't "keep good things from happening too," Pescatore says.

Vendors already with behavior-blocking technology seemed unfazed by Gates' pronouncement.

Avert Research Security, a worm-watching group within Network Associates' McAfee division, last week announced it will begin issuing alerts about new software vulnera-

aco's manager for security.

"We want to get rid of simple passwords completely," Yee says, noting that reusable passwords not only present higher risk because they might be shared or stolen, but add management cost. "We have 3,000 to 4,000 password resets every month," says Yee, who calculates this can reach \$20 per help desk call. The SecurID dynamic passwords can eliminate the need for password changes.

Separately, RSA says it is working on an RFID Blocker Tag, a technology that would prevent radio frequency identification readers from performing unwanted scans on goods with RFID tags in them. The technology is being developed with Massa-



“You can really think of this as taking the notion of secure-by-default to the next level. The system will truly know what actions are allowed for operating-system components and the applications that are running.”

Bill Gates

Chairman and Chief Security Architect, Microsoft

bilities and will add filtering safeguards or updates to McAfee's Enterscept behavior-blocking product if necessary.

Microsoft's heightened interest in behavior blocking "validates these new methods are being required to solve the problems of today's world," says Jeff Platon, security products manager at Cisco, which sells behavior-blocking software based on technology obtained last year via its Okena acquisition.

RSA and Microsoft

Microsoft also has been working with RSA Security, which introduced SecurID for Windows at the show. This is authentication and audit software for Windows 2000 and XP that allows direct log on to Windows desktops by means of the SecurID handheld token. The token generates a new password every minute.

RSA, which is making SecurID for Windows available in May, designed the software so a laptop can use dynamic one-time passwords offline without having to be connected to RSA ACE/Server 6.0 to authenticate the user. The software, which costs about \$20 per user, marks the first time RSA has designed a SecurID product intended for internal enterprise use rather than remote access.

ChevronTexaco already has 25,000 users with SecurID for remote access to the San Ramon, Calif., company's network. The company plans to upgrade from an earlier edition of ACE/Server to Version 6.0 to give SecurID dynamic-password tokens to 70,000 users for internal use as well, says Edmund Yee ChevronTex-

achusetts Institute of Technology professor Ron Rivest, who contributed to the development of the RSA public-key technology.

Also at the show:

- IT security executives from Macro-media, McKesson and Motorola joined with security firm Foundstone to launch the Security Metrics Consortium. William Boni, Motorola's chief information security officer and the new consortium's chair, says he envisions coming up with a kind of "dash board" to define security practices and implementation approaches that would help give IT departments and executive boardrooms a better understanding of how security is applied to regulatory requirements, such as the Sarbanes-Oxley Act or the Health Insurance Portability and Accountability Act, across various industries.

- Eleven security vendors banded together to form the Cyber Security Industry Alliance (CSIA), a nonprofit advocacy group to represent their policy views to federal agencies, such as the Department of Homeland Security, and international governments. CSIA is headed by executive director Paul Kurtz, who recently served as special assistant to the president and senior director for critical infrastructure protection on the White House's Homeland Security Council. The founding members — which pay anywhere from \$60,000 to \$150,000 in annual dues to have a say in policy views — include BindView, Check Point, Computer Associates, Entrust, Internet Security Systems, NetScreen Technologies, Network Associates, PGP, RSA, Secure Computing and Symantec. ■



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Computer Associates®

Domain names

continued from page 1

.com address. But for the last year, queries to that address have been redirected to its .coop address.

"We've had constantly escalating traffic," Bausell says. "We use the .coop URL in every TV and print ad. . . . We view .coop as a key differentiator for us."

Touchstone Energy is not alone. Utilities, credit unions and agricultural partnerships have purchased 8,200 .coop names from the registry run by the National Cooperative Business Association. (Registries provide the back-end operations for a domain, such as VeriSign provides for .com and .net.)

Meanwhile, British Airways and Los Angeles International Airport are among the airlines and airports that have purchased 4,000 domain names ending in .aero. The International Spy Museum is one of about 600 owners of domain names ending in .museum.

Sales of specialized domain names are expected to increase, and Internet regulators plan to select several new industry-specific extensions later this year. The Internet Corporation for Assigned Names and Numbers (ICANN) has asked industry groups to submit proposals for new, industry-sponsored top-level domains by March 15, and the topic is on the group's agenda at a meeting this week in Rome. Among the extensions expected to be proposed are .travel, .health and .union.

U.S. businesses historically choose domain names ending in .com or .net as their primary Web address. Of the 60 million domain names sold worldwide, about half are in the .com and .net domains. Domain names are available in 260 extensions, including 242 country codes, 14 generic domains such as .com, three industry-specific domains such as .coop, and .arpa for infrastructure use only.

"Our customers have a continuing interest in .com, .net and .org," says Champ Mitchell, CEO of Network Solutions, a leading registrar of domain names ending in .com, .net and many other extensions. "But if you look at the growth curves over the last two and a half years, the growth has been in names ending in [country codes]."

Multinational corporations are buying more names that end in country codes such as .de for their German operations and .uk for their operations in the United Kingdom. That trend is likely to continue as various countries, including France, Spain and China, make it easier for U.S. businesses to purchase domain names with French, Spanish or Chinese country code extensions.

Meanwhile, domain names that use non-English-language characters are becoming available in extensions such as .com and .info. Coca-Cola uses two domain names to market its products in Korea: One is an English-language domain name that ends in the Korean country code .kr; the other is a Hungol language version of Coca-Cola that ends in .com.

"The reason Coca-Cola is doing this is to address the needs of the local market," says Ben Turner, vice president of VeriSign's naming and directory services group, which operates the .com and .net registries. "We're seeing more multinationals use internationalized domain names in their billboards."

The new specialized extensions are coming whether U.S. businesses want them or not.

"I see zero demand for new domain names among Fortune 500 U.S.-based companies," says Bret Fausett, a domain name industry expert and partner with law firm Hancock, Rothert & Bunshoft. "They just don't understand what they would do with yet another domain name."

ICANN watchers expect the group to select up to 10 new, industry-sponsored top-level domains this summer. Whether these extensions will gather broad support

remains to be seen.

ICANN's track record for introducing top-level domains is spotty. In 2000, the oversight body added seven extensions — .aero, .biz, .coop, .info, .museum, .name and .pro — with mixed results.

"None of them have been terribly successful," acknowledges Mitchell, whose company offers names ending in .biz, .info and .name. "Renewal rates are weak on all of them."

Of the three existing industry-sponsored top-level domains — .aero, .coop and .museum — the most successful has been .coop, with 8,200 names.

Domain name numbers

Traditional top-level domains .com, .net and .org continue to outdistance the newer domains that are having difficulties attracting new registrants.

Total number of domain names sold worldwide: **60 million**

Primary domains for U.S. businesses

Domain	Names sold	In use	Renewal rate
.com	24,320,000	77%	55%*
.net	6,080,000	77%	55%*
.org	3,000,000	70%*	70%*
.info	1,250,000	66%	N/A
.biz	1,000,000	34%	59%
.us	750,000	28%	67%
.name	150,000	70%	70%
.coop	8,200	50%	61%
.aero	4,000	33.5%	N/A
.museum	646	50%	N/A
.pro	Not for sale yet		

Other domains (including 242 country codes besides .us): **23.2 million names**

*Industry estimate

However, despite marketing efforts, the .coop registry has sold names to a fraction of the 750,000 cooperative businesses it targets worldwide. Some of the highest-profile cooperatives, such as Ocean Spray Cranberries, have not purchased .coop names.

"There are 750,000 .coops in the world, but lots of those are in developing countries," explains Paul Hazen, president and CEO of the National Cooperative Business Association, which runs the .coop registry. "There are 100,000 .coops in India, but most of them don't have a Web site and aren't going to have one any time soon."

One difficulty for the registries that run industry-sponsored top-level domains is attracting registrars to sell their names. The .coop registry has signed up five of the 190 ICANN-accredited domain name registrars worldwide. In contrast, .info names are available from 115 registrars.

"It's taken a while for the registrar community to take sponsored top-level domains seriously because we don't have big volumes," Hazen says. "We hope that ICANN comes out with new sponsored top-level domains so registrars will see them as a growing market."

Hazen says trade groups that propose new domain name extensions should be realistic about the potential market. Because these extensions are controlled, no speculating is allowed. Legitimate name buyers aren't compelled to buy their names in every domain for protective purposes because no one else is allowed to do so.

"When we were setting up our projections three years ago, we were wildly optimistic about the potential market and how quickly it would grow," Hazen says.

The first three industry-sponsored top-level domains are not very profitable, either. The .coop registry lost money in 2002, its first full year in business, and it returned a profit of \$50,000 in 2003.

"Our challenge is to generate enough cash flow to put into our marketing," Hazen says.

Similarly, SITA, the global aviation IT and telecom solutions provider, has had limited success with its .aero registry. SITA has sold 4,000 names, and about 1,500 of them resolve to active Web sites.

The .aero registry uses the same abbreviations — such as nw for Northwest Airlines or jfk for John F. Kennedy International Airport — that the aviation industry uses.

The .aero registry is testing new features that would let users type in a flight number with an .aero extension and reach a Web page that details the flight arrival and departure times for a given day, says Marie Zitkova, .aero business manager for SITA.

"How many .aero names we will sell depends on what concepts and business ideas we identify," Zitkova says. "If we just sell them for airline or aviation company names, we'll be limited. But if we find ways to use structured [aero] domain names to identify individual flights or planes we might be able to sell tens of thousands or hundreds of thousands of names."

If these kinds of new applications gain ground, corporations could face hefty domain name registration bills each year. Specialized domain names sell for about \$100 per year, compared with \$35 per year or less for generic names ending in .com, .net and .info.

When ICANN approved its first industry-sponsored top-level domains, the oversight body also introduced new generic extensions, including .biz for small businesses, .info for informational Web sites, .name for individuals and .pro for professionals such as accountants and lawyers.

Of this group, only .biz and .info have had success, with each selling more than 1 million names. The .pro registry has not yet launched, and the .name registry has sold about 150,000 names.

"The large corporations already had .com names.

Whatever .biz and .info names they purchased were mostly for defensive purposes," ICANN watcher Fausett says.

NeuStar, which operates the .biz and .us registries, is teamed with The Travel Alliance as the back-end registry provider on its bid for the .travel extension. Richard Tindal, vice president of registry services with NeuStar, says U.S. companies will buy specialized names if the registry provides additional services beyond a Web address.

"What .travel is providing is a whole authentication process and a whole directory process," Tindal says. "As a consumer, if you see a .travel name you will know you are dealing with a legitimate travel association or a legitimate travel agency."

Most domain name registries and registrars want additional specialized domains, but they are pushing ICANN to be more innovative.

"We're very supportive of the introduction of new top-level domains as long as ICANN lets the market drive the process," VeriSign's Turner says. "Sponsored [top-level domains] can work as long as ICANN gives the registries the freedom to set up their businesses differently."

"There is potential for top-level domains where the ending itself has meaning, like .kids," Network Solutions' Mitchell says.

"If, for example, ICANN were to put in standards that the content had to be meant for kids . . . they might find a huge update. But ICANN's not thinking about that. They don't seem to be very attuned to the normal Internet user and what will be useful to them," he says. ■



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VoIP to be scaled down, untethered at VoiceCon

■ BY TIM GREENE AND PHIL HOCHMUTH

Vendors this week at VoiceCon will introduce IP gear designed to give small and midsize businesses sophisticated voice and data capabilities while converging all their traffic on one network.

Companies such as 3Com, Siemens and Teltronics will show phones, PBXs and call center gear at the Orlando event. NEC is wheeling out a whole family of voice gear, including products to unwire IP phones.

Siemens is scheduled to display HiPath ProCenter Agile, its new contact center platform that incorporates presence to give agents more tools for summoning help while talking to customers. Designed for businesses with 500 to 5,000 employees, the Agile software runs on Windows servers in conjunction with Siemens PBXs, both IP and TDM.

The Agile screen display for Windows XP

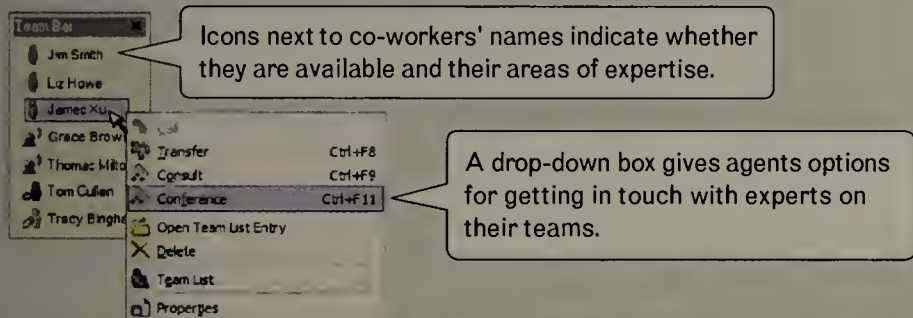
server to support features including contact center, interactive voice response, unified messaging and call accounting. Prices depend on the number of phones supported. A system with 12 analog phone trunks and 20 phones costs \$28,000.

NEC is set to debut a Session Initiation Protocol (SIP)-based IP PBX server called Univerge SV7000, an appliance aimed at organizations with up to 1,500 desktop phones. SV7000 supports SIP-based applications, such as presence, instant messaging and video, and 400-plus features on NEC's NEAX PBX, according to NEC. By using its own protocol encapsulated in SIP, NEC says it has boosted the number of features standard SIP supports from about 40. The SV7000 costs \$475 per user, including IP phones.

NEC plans to launch three wireless devices: Univerge WL 2000 Wireless Controller, Univerge WL 1200 access points and

Contact center presence

Siemens' new HiPath ProCenter Agile software for contact centers uses presence technology so call agents know who is available to help them on calls requiring more knowledge.



call-agent workstations includes a Team Bar, which is a string of icons representing personnel assigned to assist agents with calls. The icons indicate who the people are, their specialties, where they are and whether they are busy. Agents get the option to call a team member on a voice connection, share a screen of customer information or include the team member in a conference call with the customer.

This is the first such presence feature on a call center, says Ken Landoline, an analyst who tracks the industry for Robert Frances Group. "I can see this as useful for help desk call centers where you need access to subject-area experts," he says.

Landoline says the presence feature would be more useful in larger contact centers trying to maximize the use of their most knowledgeable workers. Siemens says the feature has been quietly introduced as a custom add-on to its larger call center products and will be a standard addition soon.

Teltronics plans to announce Cyreon IP PBX for up to 250 phones. The PBX is modular, consisting of a Linux-based controller, a gateway to WAN connections and a

MH 110 Handsets.

The WL 2000 is a wireless LAN switch that can provide Power over Ethernet to the WL 1200 access points, balance the load among the access points and handle channel assignment to the access points. The access controller also supports roaming.

The access points support 802.11a, b and g traffic, and impose quality of service to give priority to voice calls coming from MH 110 IP handsets. The IP handsets support all call features on an SV7000 IP PBX, according to the company.

All the new products except the phones are available now. The phones are expected to be available by midyear.

3Com plans to announce the 3102 Business Phone, a SIP-based handset that works with the vendor's VCX IP PBX, technology borrowed from 3Com's now-defunct carrier softswitch business.

The phone is also compatible with 3Com's small- and midsize-site NBX IP PBX. The phones support a G.723 wideband audio codec, which 3Com says provides clearer voice than previous 3Com IP phones. The phone is expected to be available March 19 for \$310. ■

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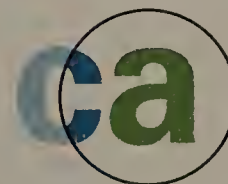


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Takes

■ **IBM** next month will begin shipping its **pSeries 690 servers** with a faster, 1.9-GHz Power4+ processor, the company says. Further out it plans to offer a new memory card that will double the amount of memory the high-end systems can support. The p690 is the most powerful of IBM's pSeries line of Unix servers and is available in configurations ranging from eight to 32 processors. Currently it supports up to 512G bytes of memory, but on June 25, IBM will begin offering the systems with a new, 128G-byte dual in-line memory module card, increasing the limit to 1T byte, the company says. Pricing for the 1.9-GHz p690 systems will start at \$641,783 for an eight-way server with 16G bytes of memory and two 236G-byte disk drives. A 32-way system with 64G bytes of memory will start at slightly more than \$2 million. Servers based on the 1.9-GHz processor will be available March 5, IBM says.

■ **Dell** last week enhanced its server roster for workgroup, small and mid-size businesses. The company released the **PowerEdge 700 tower server** and the **750 rack server** with support for the latest Pentium 4 processors from Intel. The new processors are based on Intel's Prescott core with double the amount of cache of previous Pentium 4 chips and a faster front-side bus. The servers are designed for basic tasks such as file and print serving or Web applications, but come with a number of features usually found on more expensive servers, the company says. For example, the servers support Dell's remote management services that let them be configured over the Internet. They also come with multiple hard drives with support for RAID technology that lets users remove and install hard drives without having to reboot the machine. The 700 starts at \$699 with a 2.4GHz Celeron. The 1U-high 750 rack server starts at \$949 with the same components but only two PCI slots.

Site: Lessons from leading users

Town's VoIP net delivers Amber alert system

■ BY MICHAEL COONEY

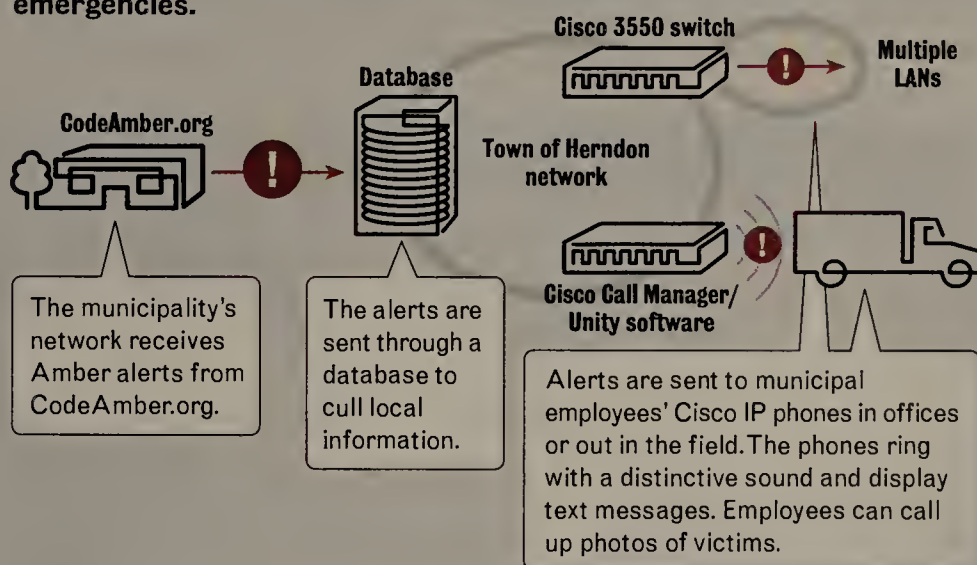
Few incidents can raise community angst, awareness and action like a missing-child report. So when Herndon, Va., had a chance to implement the national child-abduction warning system known as "Code Amber" last fall, it went all out, converging its telecom, e-mail and data networks into a high-speed VoIP environment to support the new application.

"The project could have been done without using VoIP, but it would have been much more complicated and costly," says Bill Ashton, director of IT for the town of Herndon. "What we were looking for was complete control of the environment from the phones to the switches, and we get that with

See Amber, page 18

Getting the word out

The town of Herndon, Va., has implemented a high-speed VoIP network that will alert its personnel to local missing children reports or other emergencies.



Novell previews business-continuity cluster

■ BY DENI CONNOR

Novell is expected to announce a business-continuity product this spring that lets IT administrators cluster as many as four geographically separate storage-area networks to replicate and mirror data among each other for disaster recovery.

In a Novell Business Continuity Cluster Services implementation, IT administrators can link disparate SANs to fail over for each other when problems occur. The cluster requires NetWare 6.5, Novell's eDirectory, DirXML and Novell Cluster Services 1.6.

Travis Berkley, manager of LAN services for the University of Kansas in Lawrence, has seen demonstrations of the clustering and replication technology.

"We might use this [product] for connecting remote campuses we have for replicating important PeopleSoft data," Berkley says.

"If you had remote offices in various locations, you could effectively replicate them hither and yon," Berkley says. "That way if a

branch office went down, you could still do business from corporate." Berkley has a Xiotech SAN connected to Novell NetWare servers.

The Novell Business Continuity Cluster also provides a less-than-5-minute Recovery Time Objective (RTO) and a 0-second Recovery Point Objective (RPO) that depends on the type of synchronization occurring between sites. RTO covers how long a customer can afford to be without its applications and data; RPO measures the amount of data a customer can afford to lose.

Data replication or mirroring is done asynchronously or synchronously across ATM, Fibre Channel, IP or SONET networks, depending on how much the customer has to spend, the latency they can tolerate and how distant the sites are from each other. It works with host-based, appliance-based or array-based replication products from DataCore, EMC or Veritas Software, among others.

The cluster is managed with iManager snapins, DirXML drivers and scripts.

iManager is a Web-based management console that lets administrators manage Novell eDirectory and Novell products.

The Business Continuity Cluster also uses Novell's Virtual IP Address technology, which lets the IP addresses from different network subnets be shared for failover without confusion if they already use the same IP addresses.

A Virtual File System interface lets IT administrators create scripts that affect the systems' failover. In the future, the product is expected to conform to the Storage Management Interface Specification.

Novell's Business Continuity Cluster Services is one of the first multi-way clustering and replication products. Other companies such as EMC, HP and IBM offer replication products that replicate data from one site to another. Xiotech offers n-way clustering with its Magnitude 3D.

Novell is looking for beta testers for this product, which is expected to ship in the first half of this year. If interested, you can apply at www.nwfusion.com, DocFinder. 9935. ■

TOLLY ON TECHNOLOGY

Kevin Tolly



Anyone who's followed The Tolly Group for more than a few months knows that IT vendors often ask us to conduct competitive tests. However, late last year we received a request we'd not received previously. A technology provider asked us to run a test, made public last December, of Linksys vs. Linksys.

Strange? Was it Linksys wanting to show that its new gear is better than its old gear? No. The test was sponsored by a vendor of the network processor that went into one of the Linksys boxes — but not the other.

So who won? Well, Linksys, of course. The tests showed that the Linksys box containing the sponsor's "core" achieved almost

Testing against oneself — the component wars

95M bit/sec of throughput, where the Linksys box containing "Brand X" hovered just above 20M bit/sec.

More and more, box vendors pick and choose hardware and software components from multiple vendors. In our example, boxes that retail for roughly the same price, from the same vendor, have a throughput ceiling that differs by a factor of four.

As a network manager, I breathe a sigh — and not a sigh of relief. I sigh because I realize I can't just pick a brand and stick with it. I can't just expect that the newer model will perform better than the older one. With the possibility of the raw components for each successive model being sourced differently, I don't know what to expect.

Bill of materials (BOM) cost differences of a few dollars can determine which components go into the next generation of gear. After all, many of these items, such as access points and broadband routers, will

be manufactured in huge volumes. Then, even small BOM cost differences add up.

Being unable to rely only on brand name, what is a network manager to do? Even if one had the time or interest in knowing the subtleties of whose network processors and software stacks were used to build each device, finding that out isn't easy.

I don't remember seeing a single datasheet (yet) that referenced the underlying network processor, let alone the various software stacks involved.

For our tests, the only way we could know for sure which network processor was being used was to pry open the box (which often voids whatever warranty existed) and scan the markings on the chips. Finding out the genesis of the software components is often difficult, if not impossible.

And don't expect the box vendors to help. In the industry, it is a well-known fact that most vendors of low-end gear build lit-

tle or none of it themselves (there are exceptions). Vendors, though, have no interest in users getting the impression that their product line is nothing but a mish-mash of components of varying quality from a frequently changing list of vendors.

End users like to feel that a given box brand gives them consistency. Our "Linksys vs. Linksys" testing illustrates that, even with leading brands, that is not the case.

So long as users ignore this situation, the box vendors will be happy. It is interesting, though, to see that while the box vendors do very little competitive testing, their component vendors are determined that stark performance differences become visible to the public. If not directly to the end user, then indirectly to the box vendors.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Boca Raton, Fla. He can be reached at ktolly@tolly.com.

Site: Lessons from leading users

Amber

continued from page 17

our implementation."

In a nutshell, the fiber-based network is spread over seven locations and is anchored by 12 Cisco 3550 switches, four Cisco 2950 Catalyst switches and one Cisco 6509 switch. Inside the buildings, the network supports 200 desktops linked to 100M bit/sec LANs, and connections between the buildings operate at gigabit speeds, Ashton says. All the town's 200-plus employees have Cisco 7940 or 7960 IP phones.

Herndon bought the Code Amber system from software vendor AAC and worked with systems integrator Reliable Integration Services to implement the project. Both companies are based in Vienna, Va.

How it works

According to Ashton, the system works as follows: the town of Herndon network receives alerts from CodeAmber.org, an Internet clearinghouse for national missing-child news. The network filters the alerts through a database to cull information of interest to the Herndon region, and news of relevant cases are sent to municipal employees' Cisco IP phones. The phones ring with a distinctive tone that sounds like a siren, and, within seconds, text

messages appear on the phones' screens. In turn, employees can quickly call up photos of victims and suspects, and other pertinent information.

The idea, Ashton says, is that Herndon road crews, trash collectors, building inspectors and parks-and-recreation workers make up a field force frequently numbering six times that of the local police force, so a wider network of people can be on the lookout for missing children.

Ashton says the system ultimately will push alerts to all municipal employee desktops and the town of Herndon's external Web sites, for access by citizens.

The Amber alert system is a partnership between local municipalities, law-enforcement agencies and broadcasters to activate an urgent bulletin in the most serious child-abduction cases. According to CodeAmber.org, broadcasters use the Emergency Alert System (EAS) to air a description of a missing child and suspected abductor. The system has grown in use across the U.S.: On Dec. 31, 2002, 20,670 Web sites displayed the Code Amber ticker. As of Dec. 30, 2003, more than 97,000 Web sites and desktops were displaying the Code Amber information, according to CodeAmber.org.

The savings

Aside from offering the community of Herndon, which has a population of 22,500 and sits

about 20 miles west of Washington, D.C., a state-of-the-art Code Amber system, the new network has shaved about 30% off the town's telecom costs by eliminating many leased-line charges, Ashton says.

It has saved in other ways too, Ashton notes. "We had eight different e-mail systems, multiple voice systems and a massive phone bill. Now we can have a much more simplified and efficient environment," he says.

Specifically, the town implemented Cisco's Unity Unified Messaging software, which can combine Cisco voice mail with messaging products on one screen.

The new infrastructure also has provided a variety of other applications. For example, the town government has launched automated voice assistance that is available to callers 24 hours a day. Citizens access department employee directories, and government colleagues use simplified, four-digit dialing among agencies. Because voice and data networks are converged, registration for parks and recreation, and credit card approval for other government programs can take place more quickly and outside regular business hours.

The municipality also plans to launch a system that lets employees receive EAS alerts of weather developments or terrorist threats via telephone and computer. ■

SonicWall intrusion-prevention service on tap

■ BY TIM GREENE

SonicWall is adding intrusion prevention to its IPSec VPN and firewall appliances, offering users a way to protect small and mid-size businesses as well as branch offices from multiple security threats using a single device.

By midyear, the company will introduce Intrusion Prevention Service, an offering that consists of installing and updating software that guards against Web-based attacks of its appliances, from small office/home office boxes to 1G bit/sec gear for large corporate sites.

Customers sign up for the service, and SonicWall pushes an initial intrusion-signature library to the devices. As new attack signatures are identified, SonicWall adds these additional signatures. The service ranges from \$500 per year for the low-end TZ170 appliance, to \$1,500 per year, per device, for the PRO 5060 platform.

Other vendors, notably Check Point, Fortinet and NetScreen Technologies, already have added intrusion prevention to their firewall/VPN products. There are variations among what these vendors offer, but each adds protection beyond traditional network-layer firewalls.

Multi-function security platforms are important for firms that want intrusion prevention but don't want the burden of managing separate hardware

and software dedicated to the task, says Ryan McConky, network engineer for medical Web site WebMD. For corporate sites, he has worked out an intrusion-prevention platform of his own that is based on Snort open source intrusion-detection software, but it requires expertise and time that make it unsuitable for rolling out to all WebMD doctors' offices. "Dropping something like Snort into a doctor's office would be a nightmare to manage," he says.

The eventual addition of intrusion prevention began last year when SonicWall announced improved hardware that had more processing power than it needed to handle firewalling and VPNs. The plan was to add more applications such as intrusion prevention and already-announced anti-virus and content filtering. SonicWall says there is enough processing power remaining for more applications it plans to add in the future, such as anti-spam software and patch management.

SonicWall acknowledges that its boxes cost more than dedicated firewall/VPN gear that cannot be upgraded. It argues that paying a premium upfront can save money down the road if customers decide to add more security, such as intrusion prevention. The supplemental security can be added to the SonicWall gear incrementally. ■



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Network certification choices grow with Cisco

■ BY PHIL HOCHMUTH

Cisco certifications, such as Cisco Certified Internetwork Engineer and Cisco Certified Network Professional, have become sought-after credentials for most network professionals. They also are required levels of competency that many CIOs and other IT executives look for when hiring staff.

Some say the slew of Cisco certifications has become an alphabet soup of titles, and others add that no piece of paper outweighs experience and intelligence.

This year marks the 10th anniversary of Cisco's certification and education program, which started with the CCIE examination. More than 500,000 Cisco certifications have been issued since the program was started — that's about one Cisco-certified professional for every four of the approximately 2 million Cisco routers installed.

Cisco is very different than it was 10 years ago, and that has caused the company's training and certification organization to evolve as well. What started as a test of users' knowledge of WAN routers and protocols now includes switching, security, wireless, telephony and storage.

"One part of how we approach our programs is to look at the demand," says Don Field, senior manager of core technologies for Cisco's Internet learning solutions



“Cisco certification is important. But it's definitely just a foot in the door.”

Phil Go
CIO, Barton Malow

group. He says that as Cisco adds technologies to its portfolio, new certifications evolve from user and channel partner demand. And while Cisco's certification offerings grow, some programs get scaled back. For example, Cisco's SNA IP certification was phased out several years ago after most corporations migrated off SNA networks, Field says.

CCIE is the highest level of Cisco certification. It represents "the upper echelon of networking experts worldwide," Cisco's Web site says.

"Six years ago, when first introduced stepping-stone certifications to validate skills along the way to reaching the ultimate objective of being a CCIE," Field says. These include the CCNP and Cisco Certified Network Associate (CCNA) certifications. Each of these levels also has two to four subsets, such as specializations in routing and switching, security and voice.

Also available are four paths for certification: design, installation and support, security, and service provider specialization. Many of these specialized certifications are aimed at channel partners, integrators and resellers

of specific products, and Cisco requires them to obtain various levels of channel partner support and status.

Hiring weight

So how much weight do all these titles and certifications have with users?

"I require certification of anyone I hire," says Vaas Johnson, director of network systems at the Wake County School District in North Carolina. "Basically it's assurance for us that the folks who are doing configuration and management of network equipment know what they're doing."

For the school district's network support, installation and management tasks, the county hires contractors, who are under Johnson's supervision. The last four-year contract that went out to bid called for four network engineers, one of them having a CCIE, with the others required to have a CCNA or better level of certification.

"I was active in getting that specific language put in the contracts," Johnson says. "From the experience we've had, the certification is very positive. It carries some weight with us. It demonstrates proficiency with the equipment and shows the ability to learn and stay current."

For network staff and administration professionals, the development of lower-level certifications has become a good way for users to quantify and validate knowledge accumulated from years of experience with Cisco equipment.

Because no formal coursework is required to take any of the certification-related courses, users can study and take tests at their own pace.

"Most of the stuff I already learned on the job," says Craig Cuthbert, a network engineer at Sierra Nevada, a manufacturer of aviation equipment in Sparks, Nev., discussing the recent CCNA exam he took — and passed. "I crammed for it in about a week, then just went in and took it."

Cuthbert says he did buy some books and studies, because some material in the exam covered areas he does not deal with directly, such as Layer 3 routing and WAN protocols.

He says the tests are useful not just for padding a résumé but also for forcing users to look at technology areas that might be outside what is in front of them every day.

On a need-to-know basis

"In order to get the certification, you need to know it," Cuthbert says. "It forces you to know what else is out there and not just concentrate on your one little area or specialty."

Although the amount of certifications available are good for people interested in a specialty, Wake County's Johnson says he prefers certifications with a broad base of knowledge.

"It's not helpful for management people on making hiring decisions," says Johnson of the alphabet soup of Cisco certifications. "I'd rather have someone with a breadth of knowledge. If someone has a more broad certification, that means they have the resources to get the answers they might need. They should be able to figure it out if they have that level of thinking talent."

Cisco certification ABCs

The number of titles available to users interested in being certified in various Cisco technologies has grown over the years.

Cisco Certified Internetwork Expert

The highest-level certification, involving a two-hour computer-based test and an eight-hour hands-on lab test. Less than 3% of users seeking the title pass the tests. CCIE now offers several specializations:

- Routing and switching.
- Security.
- Service provider.
- Voice.

Cisco Certified Network Professional

This step below CCIE certifies journeyman network competency and also has developed several sub-categories:

- Design Professional: Certifies knowledge of mid-size network design.
- Internetwork Professional: Certification for service provider professionals.
- Security Professional: Certification of knowledge for securing Cisco networks.

Cisco Certified Network/Design Associate

Certifies basic network design and operational skills.

Qualified specialists

Cisco also now offers these product-focused certifications:

- Access routing and LAN switching.
- Cable communications.
- Content networking.
- IP telephony.
- Multiservice switching.
- Network management.
- Optical.
- Public access.
- VPN and security.
- Wireless LAN.

To other IT executives with Cisco-based infrastructures, certifications are one of many criteria for choosing staff.

"Cisco certification is important," says Phil Go, CIO of construction company Barton Malow in Southfield, Mich. "But it's definitely just a foot in the door." Like any form of training or education, a Cisco certification is considered along with a person's experience and background.

"The most important thing is the actual performance, the actual work that someone has done — whether that person is a [CCIE] or not," Go says. "There's no substitute for actual experience. At end of the day, it's really the results that are being delivered by the person and the type of value they add the organization." ■

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Accellion to manage e-mail attachments

■ BY JOHN FONTANA

With the proliferation in volume and size of attachments taxing e-mail systems, Accellion is introducing an updated version of its caching and management appliance designed to boost network performance and let companies consolidate servers.

The Accellion Attachments 3.5 offloads e-mail attachments on to a separate device before e-mail moves over the network, which reduces network traffic and lets companies reduce the amount of storage space needed on e-mail servers. With less storage needed, companies can consolidate more users on fewer servers.

Version 3.5, which is compatible with Microsoft Outlook and Lotus Notes, includes a fingerprint feature that definitively links e-mail and attachments to ensure compliance with regulatory mandates. A harvesting tool moves attachments stored in in-

boxes to the Accellion device. Also included is a bill-back feature, which lets departments track and bill for usage.

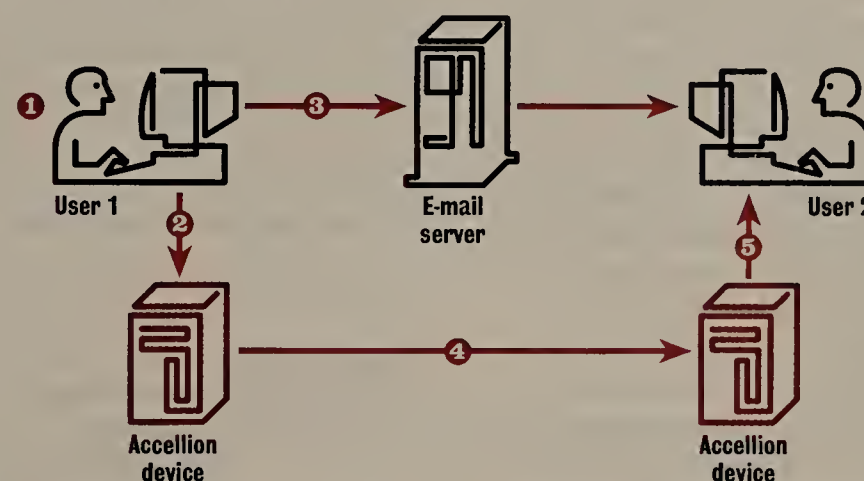
"So much business is done via e-mail that having the ability to reduce network traffic is key," says Brian Babineau, research analyst for Enterprise Storage Group.

"If I can offload the attachments, I can avoid costs on the storage side and get a performance savings on the other side," he says. Babineau says attachment management will be a necessary feature to have in networked collaboration products. For instance, Microsoft is adding archiving features to its instant-messaging software Live Communications Server. Others such as C2C, Educom and KVS also develop archiving software, but Accellion is focused on managing attachments.

A recent Osterman Research survey shows that the increased use of attachments, their expanding size and the storage requirements are some of the most serious problems facing corporate messaging systems. To address the problems, Accellion uses both hardware and software as part of Attachments 3.5. The hardware acts as storage points across the network and integrates with directories that support Lightweight Directory Access Protocol. The directory is used to determine where users

Attachment offload

Accellion's Attachment 3.5 combines hardware and software to help reduce network traffic and storage concerns created by sending attachments in e-mail.



- 1 User 1 sends attachment using Accellion Attachments 3.5 client software.
- 2 Attachment is sent to the Accellion device on the network closest to User 1.
- 3 User 1's e-mail message is sent through the e-mail server, including link to attachment.
- 4 Attachment is replicated between Accellion appliances.
- 5 User 2 clicks on attachment link in an e-mail and downloads the attachment from nearest Accellion device.

download their attachments.

The software plugs into client interfaces and adds a button to the tool bar that lets the user add attachments to the e-mail.

When the e-mail is sent, the attachment is shipped to the Accellion appliance and not to the e-mail server. A link is added to the e-mail and the recipient clicks on the link to download the attachment. Attachments also can be viewed in a Web browser and users can store select attachments on their hard drive separate from the e-mail software for use off line.

Attachments 3.5 is for use with internal and outgoing e-mail but will not strip attachments from in-bound e-mail from external users.

"Companies can get five to 10 times more users on a server after stripping out attachments," says Yorgen Edholm, CEO of Accellion. "And back-up operations are faster because you have smaller messages." The software also includes filters for determining the types and sizes of attachments that Attachments 3.5 will handle.

Attachments 3.5 also supports compression to ease file transfer and encryption and Secure Sockets Layer for secure transfer of files from e-mail clients and among Accellion devices.

The software is available this week and is priced starting at \$30 per client-side agent. The server appliance, which can include up to 120G bytes of storage, comes in three versions, the caching version costs \$8,000; the gateway, \$20,000; and the controller, \$40,000. ■

Short Takes

■ **NetPro** last week unveiled two tools as part of its plan to evolve from its directory management roots to provide companies with software for managing distributed infrastructure services. NetPro introduced **ChangeAuditor for Active Directory** and **MissionControl for Microsoft Identity Integration Server**. Both tools are expected to ship in May. NetPro says ChangeAuditor captures in real time who made changes; what was changed including the original data; when the change was made; where the change was made from; and why it was made. MissionControl for MIIS is Microsoft's meta-directory technology and the foundation for forthcoming provisioning tools. The NetPro software gives a view of the meta-directory and all the connected systems and lets users diagnose and troubleshoot problems. The software also reports on configuration changes, monitors service-level agreements connected to MIIS and allows for capacity planning. NetPro's ChangeAuditor costs \$12 per user. MissionControl for MIIS has not been priced.

Software helps battle network security threats

■ BY DENISE DUBIE

Two vendors recently upgraded products that promise to help network executives identify potential threats and reduce the effects of vulnerabilities on revenue-generating applications.

Security information management (SIM) vendors Intellitactics and OpenService separately released products last week that could help users integrate security into current management and application software infrastructure. The integration is necessary as more government regulations such as the Health Insurance Portability and Accountability Act and the Sarbanes-Oxley act emerge and require companies maintain an audit trail for network, management and security data.

"Security isn't just about shielding the

network from threats. It's about accountability as well," says Rich Ptak, president of Ptak, Noel & Associates, an analyst research firm. "Management personnel now more than ever need to document and prove that they have taken adequate steps to protect their infrastructure and assets."

SIM software automates the collection of event log data from security devices, helping users make sense of it through a common management console. The products use data-aggregation and event-correlation features similar to those found in network management software, and apply them to event logs generated by firewalls, proxy servers, intrusion-detection systems (IDS) and anti-virus software.

Specifically, Intellitactics unveiled its Network Security Manager (NSM) 5.0,

See Security, page 24

'NET
INSIDERScott
Bradner

Yet another group has seized on radio frequency identification as the solution to one of its problems while carefully avoiding even thinking about the privacy aspects. This time it's the U.S. Food and Drug Administration, which should know better.

The FDA has been concerned with the potential problem of counterfeit drugs for quite a while. It does not think there is currently too much of a problem in the U.S. (other than when people buy their performance-enhancing and other pills from Internet-based drug distributors), but is worried about what the future might bring. You might have noticed that the FDA has used the potential of counterfeit drugs as one of its main arguments against letting

Privacy as an afterthought

people (and cities and states) import drugs from Canada. This is a big issue for the organization.

The FDA created an internal (not public) Counterfeit Drugs Task Force last July to look into some aspects of the issue. After holding some public meetings and visiting various relevant sites, the task force published an interim report in October. A final report was published in mid-February that takes into account comments the task force received during the process (see www.nwfusion.com, DocFinder: 9930).

The final report explores and mostly dismisses a number of alternative ways to reduce the possibility that counterfeit drugs will reach consumers but then goes all weak-kneed about the potential for RFID tags to mostly solve the problem. The group does acknowledge "there is no single 'magic bullet' technology" that will do the trick, but seems to forget that when it talks about how RFID can be used to track "all drugs" from producer to consumer.

The FDA proposes to subject the drug

industry to "mass serialization" (I'll forgo referring to the images that come to mind when I read that term). The organization wants to assign a unique number to every "pallet, case and package" of drugs, and use that number "to record information about all transactions involving the product." The FDA says this "would allow each drug purchaser to immediately determine a drug's authenticity, where it was intended for sale and whether it was previously dispensed." In other words, the agency wants to create a vast database of the life history of each bottle of pills.

Sadly, but not unexpectedly, the word "privacy" appears only once in the 16,000-word report. That one reference reads "lastly, stakeholders will need to ensure that they comply with the patient privacy provisions of the Health Insurance Portability and Accountability Act." That admonition does not exactly show any real thought was given to the privacy ramifications of such a database.

I expect few people would be happy to

know that a full history of all the drugs they and their family have ever used will be sitting waiting for the hacker, dishonest employee or insurance company to peruse and publicize. I'm not all that sure that the pharmaceutical industry, which has voiced strong support, really wants investigators to be able to find out how to shut down the vast black market in drugs or to be able to clamp down on unapproved uses for their products. This would cut down significantly on their profits.

Just a terse listing of the privacy issues with this proposal would be longer than the FDA report. I hope somehow the FDA gets the message. The press has not; Google News finds no stories about this report that mention privacy.

Disclaimer: Harvard folk tend to be better at sending than getting messages, but the above message is mine, not the university's.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Security

continued from page 23

which now includes features that determine the potential threat of events or alerts on security devices. With customization, the software also can let a network manager know if a security event will affect a specific application or department. The company says its engineers incorporated knowledge about the cause of security alerts into the product so that it could more quickly determine the cause of threats.

For example, if an IDS such as Cisco's IDS 4250 appliance or Internet Security Systems' Proventia A201 generates an event, NSM 5.0 would analyze the origins of the alarm, its destination and potential impact, essentially narrowing down the causes before it passes it over to IT staff.

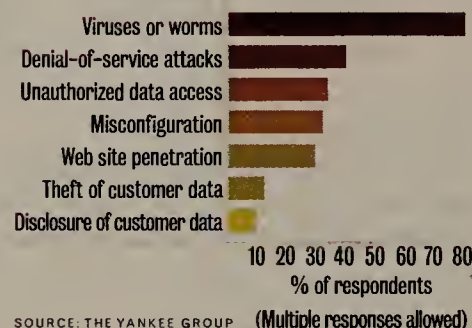
The release also lets security managers customize the level of attention a security alert should garner, based on the device and the lines of business it supports. For example, for an online retailer, an event on the firewall in front of an ordering system might take precedence over a string of events on an IDS box at a remote office. Intellitactics also added more storage capacity to NSM 5.0, which the company says provides space for unaltered log files that need to be preserved in order to comply with regulations.

NSM 5.0 costs about \$200,000 for an entry-level implementation.

Meanwhile OpenService also had business in mind when it upgraded its Security Threat Manager (STM) software. Version 2.0 of the company's flagship software includes a feature that evaluates the threat level of the attack, the target of the attack and the effect on business the attack could have. Other new features include an

Threatening behavior

What kinds of security incidents did your company experience in 2003?



escalation process that would help security and/or network managers more quickly determine the next step when a threat arises or a vulnerability is detected.

"The main thing is when we get an error message from a firewall, we now can react quick enough and know how to react," says Bob Wrobel, data security manager for Ace Hardware in Oak Brook, Ill. "There is time associated with going over logs, and we didn't want to be reactive."

Other new features include enhanced vulnerability assessments and improved correlation that can tell security managers in real time if an event on an IDS relates to an event on a firewall and to an event on a server, and so on, the company says. Correlating the events would prevent multiple security administrators from separately exploring or troubleshooting the events and would speed problem resolution.

Entry-level pricing for STM is \$50,000, with the average implementation costing about \$100,000. ■

IBM, Nokia team to ease business apps onto WLANs

■ BY STEPHEN LAWSON

IBM and Nokia are teaming to make it easier for companies to provide applications to their mobile workers.

Next-generation Nokia Communicator devices will include Wi-Fi wireless LAN (WLAN) capability and a deal with IBM will provide for smooth handoffs of applications between carrier and enterprise wireless networks.

Corporate customers will be able to write applications using Java tools and have them run on different kinds of networks and even on successive generations of client devices, company executives say.

As Wi-Fi networks proliferate in corporations and public places, and mobile operators deploy faster cellular data networks, more capacity has become available for running enterprise applications. However, keeping those applications running while moving among different types of networks is complicated. Nokia and IBM aim to make the experience seamless.

The technology is expected to be available in the fourth quarter when the Nokia Communicator 9500 hits the market. The combination cell phone and handheld computer from Nokia will be joined by more Communicator devices in 2005, according to Nokia.

The tri-band GSM phone will support IEEE 802.11b WLANs, Enhanced Data Rates for GSM Evolution and General Packet Radio Service for data communications. It runs on the Nokia Series 80 software platform, which is based on the Symbian oper-

ating system.

Developers will be able to use a desktop Java Development Kit to extend their Java-based applications to the Communicator, which will come with Java 2 Mobile Edition Personal Profile runtime environment that enables integration of middleware, according to the companies.

On the device, WebSphere Everyplace Connection Manager Client will direct the application to the fastest available network. IBM's Lotus Sametime Instant Messaging Client software will run on the Communicator, so users can keep in touch with their colleagues wherever they are.

The network hand-off mechanism could let companies take employees' data sessions off the mobile operator's paid network and move them to the free internal Wi-Fi network without making previous arrangements with the mobile operator, says Eugene Cox, director of mobile solutions at IBM.

In addition to making applications available on the Communicators, enterprise customers can manage the devices with IBM's Tivoli Provisioning Manager and Tivoli Configuration Manager, which they also can use to manage desktop and notebook PCs.

Nokia says the Communicator 9500 will sell for about \$1,000. The price of IBM's software in the package will depend on which components are used and the size of the deployment, according to IBM. The deal is not exclusive for either partner, officials say.

Lawson is a correspondent with the IDG News Service's San Francisco bureau.

Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS ■ CARRIER INFRASTRUCTURE DEVELOPMENTS

AT&T and MCI find common ground

Carriers sign agreement ending dispute over calls routed through Canada, other disputes.

■ BY DENISE PAPPALARDO

It turns out it was perhaps just a war of words.

Last summer when AT&T accused MCI of routing calls through Canada to avoid paying access fees, AT&T tossed around strong terms such as fraud and racketeering, and claimed lost revenue in the millions of dollars.

Last week, however, the two carriers ironed out this and a few other outstanding issues without anywhere near as much fanfare.

AT&T and MCI drafted a settlement agreement that was filed with the U.S. Bankruptcy Court in the Southern District of New York. The carriers are seeking court approval of the agreement that puts an end to call routing, local switched access and contractual arguments between the telecom giants. The court is expected to hold a hearing this week to review the agreement.

Experts have speculated that a federal investigation into possible wrongdoing by MCI might fizzle out now that AT&T has dropped its suit, although the Department of Justice and FCC investigations remained

open last week.

AT&T called the most public disagreement the "Canadian Gateway Project." The company accused MCI and its partner Onvoy of illegally routing calls through Canada to avoid paying access fees to AT&T and other carriers.

The accusations were quickly followed by a civil law suit against MCI claiming fraud and racketeering. MCI responded with a motion urging the bankruptcy court to sanction AT&T and find it in contempt of court.

Experts speculated in August that AT&T could have lost up to \$100 million as a result of the MCI maneuver.

MCI paid no restitution to AT&T as part of the deal.

"It turns out it was just a boldface attempt by AT&T to derail MCI's emergence from bankruptcy," says Bryan Van Dussen, director of telecommunications research at The Yankee Group. "It didn't work."

After AT&T's accusations became public, MCI halted all least-cost routing practices, according to MCI CEO Michael Capellas. Although MCI says its practices were legal, it wanted to distance itself from the nega-

tive publicity they generated.

Both carriers have agreed to drop their separate court actions three days after the court approves the settlement agreement.

AT&T separately announced last week that it also settled its dispute with Onvoy over its part in routing calls for MCI. AT&T says it is keeping that agreement confidential.

In addition to the dispute over call routing, the carriers have been arguing over how much each was owed for telecom facilities and services. AT&T says MCI owes it more than \$100 million while MCI says AT&T owes it approximately \$220 million, according to court documents. The agreement wipes away much of those, except for all services that were delivered, but not invoiced, after Oct. 10, 2003. The agreement says each carrier will invoice all such services and pay the other party in full. Neither carrier commented on the significance of the Oct. 10 date.

The carriers' Unbundled Network Element-Platform (UNE-P) disagreements are even more complicated. The motion says there is a "significant contractual dispute between AT&T and [MCI]" over UNE-P

The disputes

There were four main disagreements between the AT&T and MCI:

- **Amount owed based on facilities and services that each carrier provides.**
- **UNE-P contractual dispute since 1998.**
- **AT&T's racketeering and fraud claims against MCI regarding call routing through Canada.**
- **MCI's contempt of court claim against AT&T, which says AT&T circumvented standard bankruptcy court rules by filing its civil action.**

local switch access provisioning before January 2004, when the carriers signed a two-year contract.

The motion stresses more that the overall agreement "is the product of extensive arm's length negotiations, is fair and reasonable under the circumstances and in no way unjustly enriches [either carrier]." ■

Short Takes

■ **Equant** last week announced two global satellite services aimed at keeping remote offices in far-flung regions connected to headquarters. The carrier's **Dedicated Satellite Access** service lets IP VPN customers connect users, especially in areas of the world without advanced telecom infrastructure. The service offers users the same Triple-DES and class of service available to landline customers that connect to their corporate VPN via a T-1 or frame relay connection. The Dedicated Satellite Access service is available in bandwidth increments of 64K up to 2M bit/sec. The service provider also announced its IP Satellite Access service, which Equant says will be available by the end of June. This is a shared service that lets users pay for

64K bit/sec worth of bandwidth, but burst up to 2M bit/sec when needed. Equant says it will deploy an Idirect NetModem II Broadband Router at each customer site to support bandwidth sharing among satellite users. Equant is teaming with global satellite service provider **Intelsat** to support both service offerings. Equant would not offer specific pricing information.

■ **Lucent** last week announced an agreement with **Movaz Networks** to jointly develop metropolitan dense wavelength division multiplexing systems using Movaz's DWDM technology. The new systems will broaden Lucent's Metropolis line of metropolitan optical products. Currently, Metropolis metropolitan DWDM products are targeted at large metropolitan-wide network applications. Movaz will help extend the Metropolis line to the network edge, where service providers could provision wavelengths directly to enterprise customers.

Laurel's ShadeTree software branches out

■ BY JIM DUFFY

Edge router maker Laurel Networks last week unveiled software that it says enhances its router's broadband and Ethernet service performance, and lets service providers upgrade the system without deactivating the network.

The company's ShadeTree 3.0 software runs on Laurel's ST200 router. New features include L2TP Network Server (LNS) for ISPs offering broadband IP services; Laurel Instant Versioning (LIVE), a runtime hitless software upgrade capability; and Virtual Private LAN Service (VPLS) for extending Transparent LAN Services across a Multi-protocol Label Switching backbone.

LNS works with the broadband remote access server software Laurel rolled out for the ST200 last year. LNS runs on exist-

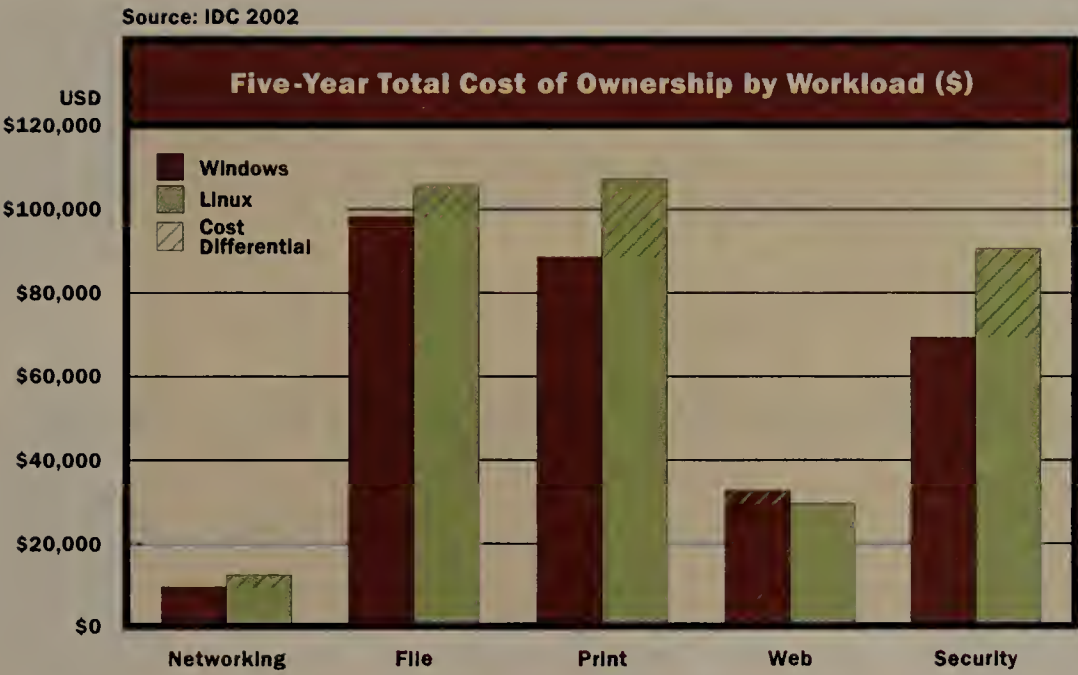
ing ST200 line cards to support 128,000 subscriber sessions on 10G bit/sec uplinks — four times the bandwidth and number of sessions of competitive products, Laurel says.

LIVE enables real-time patches of portions of live running code without affecting system operation, Laurel says. Service providers can install new diagnostics and implement unplanned updates on the running system without service interruption to thousands of customers connected to a single router. Typically, routers need to be disabled to install patches or diagnostics.

VPLS adds a point-to-multipoint Ethernet service to the ST200's existing point-to-point Ethernet service support. VPLS can be enabled on a variety of access networks supported by the ST200, including Ethernet, SONET, ATM or frame relay. Laurel

See Laurel, page 28

**REAMS HAVE BEEN WRITTEN ABOUT WINDOWS
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EYE ON THE CARRIERS

Johna Till Johnson



It happens all the time: An application runs poorly. Application developers point fingers at the network engineers; network folks cast aspersions on the developers — and nobody's really sure of the root cause. Tracking down the answer takes days, weeks or months — with lines of business getting less patient as the hours tick by.

To avoid these problems before they hit, IT executives should think about implementing effective application quality management (AQM). That means taking a big-picture view of application performance, deploying the right tools and technologies, and engaging in operational and organizational best practices.

Some history: Fifteen years ago, application performance was purely a software developer's game and mostly involved tailoring an application to the mainframe sys-

tem it executed on. The advent of client-server computing in the early 1990s brought network issues into the picture. Software executables now were running on clients and servers linked by networks whose performance characteristics now affected application performance. These days, thanks to trends such as virtualization, grid computing and Web services, it's often impossible to say with certainty where the executables physically reside — which means that understanding the interaction between application components and the networks linking them has gotten even harder.

Essentially, AQM requires taking a holistic view of an application's performance in this distributed, virtualized environment, both across the app's development life cycle and up through the Open Systems Interconnection (OSI) seven-layer stack. Tools and techniques required for prototyping, capacity and planning, and quality assurance aren't the same as those required for monitoring, thresholding and troubleshooting an application already in deployment. Moreover, "lower-layer" OSI

issues can affect application performance. An app might work fine when running alone over a low-latency, high-bandwidth LAN, but crash and burn when it's combined with other apps across a high-latency, low-bandwidth WAN.

What are some practical steps for implementing AQM? First, IT executives should consider application management from the get-go. That means allocating time and money to answering the question, "How will we manage this application?" — even before the design specifications are complete. Make sure design engineers understand the service-level agreements that application delivery folks need to live up to — and have them sign off on them.

Second, effective AQM requires multiple tools and product suites. Neither network management nor app management suites are enough — look to cover the full spectrum of infrastructure and application management. Products from companies such as Aprisma, Concord Communications, Micromuse, Smarts and Visual Networks can provide insight into infrastructure component performance and

root-cause analysis. Packages such as those from Altaworks, BMC Software, Empirix and IBM Tivoli provide insight into app-layer performance. Also note that certain tools are optimized for particular points in the application life cycle. Mercury Interactive fits well for capacity planning of prototypes for example, while Network Associates' Sniffer is an indispensable troubleshooting and monitoring tool for deployed apps.

Finally, IT executives should seek to "desilo-ize" their organizations. Create an application quality management team, and staff it with individuals who hold primary responsibility across the spectrum. Specifically, include individuals responsible for network and server planning, deployment and management as well as those responsible for application design and rollout. Ensure that these individuals share responsibility for AQM.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Lawmakers hear case for regulating VoIP

■ BY GRANT GROSS

WASHINGTON, D.C. — A U.S. senator, a state public utilities commission and a telephone company executive have asked the FCC and Congress to slow down their rush toward declaring VoIP service essentially free from government regulation.

Most members of the Senate Commerce, Science and Transportation Committee called for the "light touch" approach to regulating VoIP that FCC Chairman Michael Powell advocated during a hearing last week. However, Sen. Lamar Alexander (R-Tenn.) said efforts to exempt VoIP from telecom taxes will take money away from state and local governments.

Those governments across the U.S. currently collect about \$20 billion per year in telecom taxes and fees, and if VoIP is exempted from those taxes, that number will shrink as more telecom carriers and more consumers switch to VoIP, said Alexander, who participated in the hearing as a witness. Exempting VoIP from state taxes would be an "unfunded mandate" from Congress, something the Republican majorities in Congress pledged to avoid, Alexander said.

Some committee members suggested VoIP adoption would drive investment and expansion of broadband services because VoIP service is available only over broadband, but Alexander questioned why Congress should give broadband and VoIP



“There's no justification . . . for Congress deciding to give telecommunications companies such a bonanza, then turn around and send the bill to governors and to mayors.”

Sen. Lamar Alexander
R-Tenn.

special treatment.

“There's no justification . . . for Congress deciding to give telecommunications companies such a bonanza, then turn around and send the bill to governors and to mayors,” Alexander said. “If Congress really wants to pick and choose among American business enterprises and decide that high-speed Internet access business is one we all want to subsidize, then Congress ought to pay the bill and not send it to the states.”

Earlier this month, the FCC began a rule-making process to determine the appropriate level of regulation for VoIP, with Powell suggesting the emerging voice service should be treated more like unregulated Internet service than heavily regulated telephone service.

Opening VoIP to state and local taxes could mean VoIP calls could be taxed dozens of times as they travel through taxing jurisdictions, and could discourage investment in VoIP services, said committee member Ron Wyden (D-Oregon).

Committee member John Sununu (R-N.H.) said he plans to introduce legislation within weeks that would create federal jurisdiction for VoIP regulation, not state or local jurisdiction. Sununu's legislation also would exempt VoIP from state and local taxes, as Internet access was under the tax moratorium that expired in November.

VoIP traffic should be treated the same as other IP traffic, such as e-mail, Sununu argued. “If we try to regulate or

legislate, discriminating on the type of data that is being sent over a broadband network . . . then I think we are headed down the wrong path,” he said.

But others argued VoIP providers shouldn't get special exemptions from taxes and regulations that other telecom carriers must deal with. Most VoIP calls end up on traditional phone networks built by telephone carriers, and VoIP carriers should have to pay access fees for the use of those lines and pay into the Universal Service Fund, which helps bring telephone service to rural and poor areas, said Glen F. Post III, chairman and CEO of telephone service carrier CenturyTel of Monroe, La.

“[VoIP carriers] should not be allowed to unilaterally exempt themselves from potentially billions of dollars in access payments — especially at the expense of the telecom sector as a whole,” Post said.

Gross is a correspondent with the IDG News Service's Washington, D.C., bureau.

The softer side

Renowned for its hardware, Laurel Networks has updated its ShadeTree router software with:

- **L2TP Network Server** — a broadband remote-access feature specifically for ISPs.
- **Laurel Instant Versioning** — enables “hot patch” of running code to add diagnostics or implement fixes.
- **Virtual Private LAN Services** — enables point-to-multipoint Ethernet services.

Laurel

continued from page 25

says this feature widens the addressable market for Ethernet service deployment.

Despite claims of competitive advantage, Laurel only has a handful of customers — Dacom, KT and Level 3 Communications among them — while competitors Cisco and Juniper add several new customers each quarter, analysts say. Also, Juniper just announced its M320 edge router and Tellabs enhanced its 8800 line (obtained from the Vivace Networks acquisition) with VPLS, so Laurel's in for a fight.

“Laurel has yet to capture a measurable share of the edge router market,” says Rolf Schonhowd, a senior analyst at Current Analysis. Regardless, “Laurel has shown itself to be a [technology] frontrunner among its fiercest competitors, which will give the company a competitive edge when every major equipment vendor is pursuing this space.” ■



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SOHO WLAN vendors weigh value of WPA cert

■ BY TONI KISTNER

Strong security for wireless LANs is finally here — in the form of Wi-Fi Protected

Short Takes

■ **2Wire** recently launched the **MediaPortal**, a software platform that lets DSL providers offer satellite TV, DSL and entertainment services — such as media on demand, personal video recorder, music and photo management, and unified messaging — through one set-top box and back-end management system. MediaPortal will let customers buy digital content or access streaming media from the Internet via set-top box, making it available to multiple devices over the home network. The platform uses 2Wire's Component Management System, which lets providers diagnose and troubleshoot technical issues, and remotely provision customized data, voice and entertainment services.

■ **ExpertCity** recently announced an online meeting service. **GoToMeeting** doesn't require client software and secures sessions using Advanced Encryption Standard. Participants can join through e-mail or instant-messaging applications, and access desktop viewing and sharing, keyboard and mouse control, and chat. Audio is available, and administration tools provide reporting, tracking and access to billing information. Two versions of the product will be previewed in May: **GoToMeeting** for professionals and small businesses, and **GoToMeeting Corporate** for firms requiring central reporting and administration of multiple accounts. ExpertCity hasn't announced availability, but says it will offer flat-rate pricing as follows: **GoToMeeting** costs \$75 per month with a discount of 20% for an annual subscription; **GoToMeeting Corporate** costs \$65 per month, per organizer (minimum of five organizers: \$65 x five organizers x 12 months = \$3,900).

Access. Since June, the Wi-Fi Alliance has certified more than 175 products, meaning they will interoperate with certified products from other vendors. However, many products — especially on the consumer side — still aren't getting tested, which means WPA might fail to secure your remote or branch-office network.

WPA is the specification the Wi-Fi Alliance put forward in late 2002 as an interim replacement for the Wired Equivalent Privacy (WEP) encryption standard. A subset of the upcoming 802.11i wireless security specification, WPA addresses WEP's weaknesses by using the Temporal Key Integrity Protocol (TKIP) to enhance data encryption and 802.1x and EAP authentication, which relies on a central authentication server such as RADIUS.

Last month, the Wi-Fi Alliance made WPA mandatory for Wi-Fi interoperability, a move that's receiving a mixed response from small office/home office hardware vendors. Vendors test products for interoperability in their research and development facilities, and most pay the Wi-Fi Alliance to have their products Wi-Fi-certified. However, there are some exceptions.

Belkin blames bad timing for its lack of WPA-certified products. When the Alliance announced WPA certification was mandatory, the company says it had just completed certifying all its gear for Wi-Fi interoperability. Belkin says its products support WPA, and plans are underway to certify them. But the company also stresses that internal testing has revealed no interoperability problems. Similarly, SMC Networks says its wireless products support WPA and all are Wi-Fi-compliant.

But the Wi-Fi Alliance disagrees. "SMC can't support WPA unless [products have] been certified," says Brian Grimm, a spokesman for the group. "SMC is implying its products comply with the Wi-Fi set of testing, and that's not correct. It could say products are 802.11b-, g- or a-compliant, but not Wi-Fi-compliant."

The group says WPA certification is crucial, saying that 25% of products fail the certification tests on the first try. While WPA is built into the chips vendors use to build their products, changes made to the reference design board and the way a vendor integrates software and drivers can cause it to fail.

"Because security either works 100% or it doesn't work at all, one of the highest failure rates we see in the labs is for WPA," Grimm says. "It's not like you can just have

Mixed messages

The leading SOHO hardware vendors square off on Wi-Fi and WPA security certification.

Linksys

We provide all the Wi-Fi-certified services to our customers whether they use them or not. It's important to [protect] your WLAN, whether at home or the office, with the maximum amount of security possible. Some home users do use RADIUS servers, and we want to make sure we reach all our customers.

Netgear

We will continue to produce standards-based products and consider interoperability important. But we aren't going to rush out to every test that comes across our path unless it's in the best interest of our customers. Our enterprise customers demand Wi-Fi certification, but [our research showed that] most consumers didn't know what Wi-Fi was.

a little lower throughput."

Common problems seen in the labs are state machine errors that result in an association failure, improper handling of Message Integrity Check and failures resulting in either attacks going undetected or a system shutdown. Also common are excessively long roaming times, TKIP encryption errors resulting in devices failing to associate and lack of support for multiple servers.

The Wi-Fi Alliance offers certification tests geared to enterprise- and consumer-level products. WPA Enterprise includes the TKIP encryption and authentication server portions, while WPA Personal demands only TKIP encryption because most consumers and small offices don't use authentication servers. WPA Personal was formerly called PSK for "personal shared key."

Netgear is of two minds when it comes to WPA certification. While it's having its business-class products certified — two 802.11a+g adapters and an 802.11g access point will be certified next month — the company is hesitant to certify its consumer line. Lianne Caetano, a Netgear product-line manager, says when certification testing was announced last April, there was no test bed available for testing consumer products, and at the time its customers "were barely using WEP. We didn't want to put full WPA in all our products. It didn't make sense."

However, the Wi-Fi Alliance says PSK (WPA Personal) testing was available from Day One, but admits Netgear might have had problems getting products onto a PSK test bed until recently. This was because of the high number of 802.11g products in the test queue. "Last fall we had 50 people wanting to certify 802.11g products tomorrow," Grimm says. "In spite of our best efforts, we didn't have the forecasting methods to really understand that."

row," Grimm says. "In spite of our best efforts, we didn't have the forecasting methods to really understand that."


The group is taking steps to improve the testing process, which it hopes will spur adoption. It's expanded capacity at its four test centers and has combined the WPA and 802.11b/g/a tests to cut test time from two days to 12 hours. To address cost, the group has cut test fees from \$5,000 per product per test to \$7,500 per product combining 802.11b/g and WPA tests. It also offers a pre-certification program that lets companies test their products before bringing them into the labs.

"We want to address that 25% failure rate on the front end," says Frank Hanzlik, managing director of the alliance.

Although Netgear is committed to certifying its business products, it questions the value of WPA on the consumer side. "Our decisions are customer-driven, and our customers are very pleased with the levels of security we offer now," says Caetano, who adds that changing the Service Set Identifier number or turning off the SSID broadcast is often enough for them.

"The average hack into WEP takes six hours. An expert can do it in half an hour," she says. "The expectation is that most hackers aren't sitting outside residential areas trying to hack into someone's network. They're trying to use it to get onto the Internet, not for felonious reasons."

In contrast, Linksys already has certified 11 routers and client devices that could be used with an authentication server for WPA Enterprise. The company plans to begin certifying its consumer products — starting with media players and game adapters — using WPA Personal in the coming months. ■



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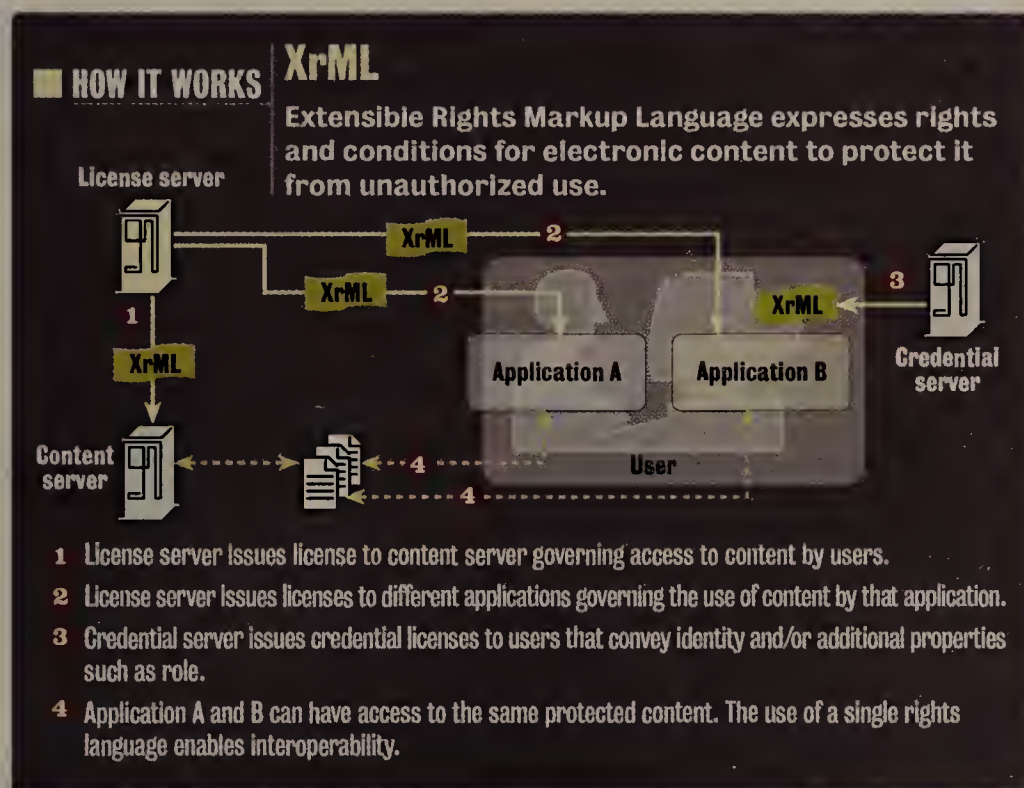
■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

XrML keeps content under control

■ BY ARNY EPSTEIN

Rights management technologies enforce predetermined rules, or policies, designed to protect and control electronic content. They can dictate a variety of vital day-to-day operations on content, ranging from simple viewing and printing to editing and sharing. The proprietary formats of digital rights management has made it too difficult to share content with others. Yet many companies need rights management to solve the dual challenges of regulatory compliance and information leakage. To succeed, rights management must be able to protect content in its native format and share that information across the corporation.

Extensible Rights Markup Language (XrML) is an XML-based language that determines rights and conditions for the use of electronic content to protect it from unauthorized use. XrML is slated to become an International Standards Organization standard this quarter as the MPEG-21 Rights Expression Language and is undergoing a months-long standards review within the Organization for the Advancement of Structured Information



Standards. Some vendors already include XrML in word processing, publishing, content management and other security software products.

XrML lets rights enforcement software outline access and usage policies for digital content in the form of licenses. XrML licenses define who can access the content, and how it is protected and distributed; and it controls detailed usage rights such as authorized printing and time-based permissions to perform certain operations. When an author protects content, which can be in the form of word documents, spreadsheet data or Web-based reports delivered in a browser or e-mails, the content is typically encrypted

to prevent unauthorized access or tampering. Inside this encryption is a license or a pointer to the license on a policy server. When a reader tries to open the document, the application receives the license from the corporate license server, validates the user's authorization and enforces the usage privileges defined for that user.

Any rights-enforcement software that supports the XrML standard can subsequently administer the XrML license. What's more, XrML lets users develop their own rights to meet specific or unique needs.

A standard rights language lets persistently protected content move between

applications using cut-copy-paste features. XrML provides access to content using content and credential servers, which issue credential licenses to users that determine their identity and role. When an employee joins or leaves a company, access to content should be provided or removed automatically using XrML to communicate directly with the necessary systems.

There are several approaches for binding rights to content. Some implementations of XrML may embed the rights, or license, within the content. This might be more suitable for static content, such as music, whose rights do not change. Dynamic content should have a pointer that directs the application to the policy server to receive the latest policy. This pointer lets user privileges be changed without republishing the content.

Today, XrML lacks methods for tracking and then auditing user actions on protected content. The earliest version of XrML, designed for content publishing, simply needed to grant or deny access. As XrML becomes more popular in corporate environments, new versions of the language will need to address this type of auditing, and tracking will be critical for auditing, compliance and governance regulations.

XrML provides a good start at a common structure for representing and expressing rights. However, much work remains to define how rights are communicated between policy servers, the actual content and heterogeneous applications.

Epstein is CTO at Liquid Machines. He can be reached at aepstein@liquidmachines.com.

Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you want to contribute a primer on a specific technology, standard or protocol, contact Amy Schurr, senior managing editor, features (aschurr@nww.com).

Ask Dr. Internet

By Steve Blass

The IPv6 protocol stack software that ships with Windows 2003 and Windows XP (and the IPv6 technology preview for Windows 2000) configures network addresses automatically at start-up. Can we use IPv6 on the LAN instead of Dynamic Host Configuration Protocol to configure network interfaces and keep LAN traffic private from the Internet without using network address translation?

Microsoft's IPv6 software documentation says it is

not for production use, but it is a good time to begin IPv6 testing. Local link addresses are configured based on a network interface card's media access control address, so DHCP might not be necessary in the IPv6 LAN. The downside is these addresses are easily spoofed. IPv4 must be installed to use IPv6. Win 2003 lets you add IPv6 through the Network Connections' properties dialog. Everything else is done from the command line. On XP, use the 'ipv6 install' command for

installation. The command 'ipconfig/all' displays your IPv4 and IPv6 addresses. Use 'ping ::1' to ping your local IPv6 localhost address. Pinging IPv6 hosts using their 128-bit address can be painful, even in hexadecimal. Host tables and DNS can be used to provide IPv6 name service. By enabling Internet Connection Sharing, you can use IPv6 on XP as a "6 to 4" router to tunnel IPv6 traffic over an IPv4 network. For more information, go to www.nwfusion.com, DocFinder: 9936.

GEARHEAD
INSIDE THE
NETWORK
MACHINEMark
Gibbs

Cascading Style Sheets (3), ho-ho!

```
<html>
  <body>
    This is line one
    <br>This is line two
    <div>This is line three</div>
    <p>This is line five</p>
  </body>
</html>
```

Note that `
` does not have an associated end tag (`</br>`), but both `<div>` and `<p>` do. This means both tags define a region of a document but `<div>` is cleaner, as it has less effect on content. On the other hand, ``, which was added in HTML 4.0, is even cleaner because it doesn't cause a line break.

And like any other tags, `<div>` and `` can have IDs and classes assigned to them. For example:

```
#something { ... }
span.nothing { ... }
<span id="something"> ... </div>
<span class="nothing"> ... </div>
```

DHTML is not a standard; it is a marketing term that Netscape coined and Microsoft adopted to describe some new features of its browsers from Version 4 onward.

Of course, there is a consequence of this being a marketing term: You can kiss compatibility goodbye. Well, you can kiss complete compatibility goodbye, as there

is significant commonality between the implementations — most things you want to do with DHTML will work in either browser. But the devil is in the details ... and in the bugs in the browsers (which are problems that are not just cross-vendor but cross-version as well — but what did you expect?).

Underpinning DHTML is the document object model (DOM), a map of the contents of a Web page. The DOM is a schema that provides a way of identifying the components that make up a given Web page starting from the root object and decomposing into sub-objects.

At the root of the DOM is the browser window named (no surprise) window, and any element must start with the object window. So to get to the elements in a document displayed in a browser, we refer to a path that begins "window.document" although just "document" is usually used.

So let's say you have a button defined such as:

```

```

This image is a named element under the images objects branch of the DOM, and you would refer to it as window.document.images.pic1 or document.images.pic1. Changing this element with

JavaScript is as simple as this:

```
document.images.pic1.src="pic1state2.gif"
```

This means you can dynamically change the properties of an on-screen element under IE4+ and NS6+. Moreover, under IE4+ and NS4+ you can hide or show elements, change the Z-index (the depth of elements on screen), control the position of elements, move elements on screen and let users move screen elements. And for IE5+ and NS4+, you can change the clipping of an object — the amount of the object that is displayed.

As you might guess, there are many differences between the DOMs of Microsoft, Netscape and other browser vendors. For example, below the window object under Internet Explorer and Netscape browsers are the object's document, history and location. Then the browser's DOMs part ways: The Netscape DOM also has frames at this level, while Microsoft's DOM includes toolbar, packages and navigator.

For the purposes of manipulating content though, we are concerned only with the document branch of the DOM, and here is where standards exist, which we'll discuss next week.

Styled comments to gearhead@gibbs.com.



Cool Tools

Quick takes
on high-tech toys
By Keith Shaw

Even with a few weeks of trade-show traveling, we found the time to get some quick testing done on some cool new devices. Here are some mini-reviews from the Cool Tools Test Zone.

Product: Gateway DVD Recorder (AR-230)

Company: Gateway

Price: \$300

What it does: Just like a VCR, the AR-230 connects to your home entertainment system to let you record TV shows directly onto DVD+RW or DVD+R discs. The device also acts as a DVD progressive scan player, so you can watch pre-recorded DVD movies on the system. The box also supports VCD, SVCD, audio CDs, MP3 CDs and JPEG photo playback.

Why it's cool: Using this device was a superbly easy way to record TV shows onto DVDs. Set-up was simple, and the interface was very intuitive. Several options for audio and



The Gateway DVD Recorder not only records TV shows to DVD but also can help convert VHS tapes to disc.

The latest from the Cool Tools zone

video inputs and outputs (such as composite, S-Video and component) made this worthy of our home entertainment center.

In addition, you can connect a camcorder or a VCR to the device and transfer your home movies onto a DVD. If you don't care about fancy menus, title bars and such, this is the most direct (and simplest) way to transfer your old tapes onto the DVD format. And the price is reasonable.

Grade: ★★★★★ (out of 5)

Product: ZyAir B-220 Wireless LAN USB Stick

Company: Zyxel

Price: About \$50 (check www.buy.com)

What it does: This is a USB device that gives you 802.11b wireless LAN network connectivity just by plugging into a free USB port. The device is about the size of a stick of gum and is smaller than a PC card.

Why it's cool: For mobile users, the USB stick is perfect for quick wireless network access and small enough to conveniently throw into your laptop bag. The B-220 also does more than just provide connectivity — it's Wi-Fi-certified and Windows-Hardware-Quality-Labs-certified, and it supports 802.1x authentication.

Grade: ★★★★★

Product: AVerMedia TVBox 9

Company: AVerMedia

Price: \$180

What it does: The TVBox 9 is an external device that lets you plug in a TV feed for viewing on any CRT or LCD monitor. Audio and video inputs on the front of the device let you plug in a DVD player, VCR, camcorder or video game console. When you connect a PC to the device, you can get TV picture-in-picture, letting you



The AVerMedia TVBox 9 can connect a TV feed and an Xbox to any LCD monitor or PC.

watch TV on your monitor while you surf the Internet.

Why it's cool: The number of different devices you can connect through the box is pretty amazing and give you many ways to use the device. For example, students in a dorm room that doesn't have space for a TV and computer can connect the TV line into their LCD monitor and have both (not to mention an Xbox connection). Setup is straightforward; the only thing that irks us is the short VGA and audio cables, making for a cramped setup when connecting the PC. Still, being able to switch from a computer to watch cable TV, then switch over to a video game, is sweet.

Grade: ★★★★★

Shaw can be reached at kshaw@nww.com.

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EDITORIAL

John Dix

The new-fangled way to stay connected

One e-mail about a new service is a quirk. Two e-mails in a few days is a curiosity. Three e-mails within the space of a week is a bona-fide trend. And when *The Wall St. Journal* and *The New York Times* write stories about the trend, you suddenly have a phenomena.

So-called business social networks sprung on the scene last year and, judging by personal experience, the desired network effect is beginning to work. People that have joined these private Web sites are inviting their friends to join, who are inviting their friends to join. While my in-box isn't overflowing, I have received enough invites to spark my interest.

Unlike general sites like Friendster.com, which bills itself as a way to meet friends and find dates, sites such as LinkedIn.com and Ryze.com are targeted at professionals. While the latter two differ this way and that, the general goal is to help you make connections that, as Ryze puts it, will enable you to "grow your business, build your career and life, find a job and make sales."

These business social networks are based on a basic pyramid scheme. If everyone that joins invites friends, the numbers get large fast. I was invited by two people to join LinkedIn, and after I filled in my profile (title, industry, areas of specialty and biography), I accepted their invitations to join their networks. They already had contacts so I was instantly two degrees away from 107 people (the site keeps track for you).

In fact, the site said I was three degrees away from 1,400 contacts and four degrees from 28,100 contacts. But I could only see the list of people known by my two original contacts. And if I was to try to reach out to one of those 107 subscribers, the request would have to be OK'd by my original contact.

I found some interesting folks I want to meet, but it also works the other way. I joined LinkedIn at 3 p.m. and by 7 p.m., there was an invitation from a CEO asking if I would join his network. That was compelling evidence that there is some magic here.

But the real value comes when you search the whole membership base for specific contacts, whether you're looking for employees or a job. The site returns people you can contact immediately and others that want you to step through the referral process.

LinkedIn lets you do this for free today, but apparently will start charging for the service later this year. Ryze charges \$10 per month for its most advanced search capabilities.

While interesting and potentially useful, the question is whether these sites will be able to make enough money to survive.

— John Dix
Editor in chief
jdix@nww.com

Flash, but no substance

Regarding Mark Gibbs' Gearhead column "The nuts and bolts of Flashy presentations" (www.nwfusion.com, DocFinder: 9923): I understand that this is a help-type column and many would-be Flash content creators will be quite happy with it. But, from a user point of view, I would be happy to see Flash and its kind just go away. The essence of what Flash does is take control of what I view, preventing me from using simple techniques for controlling what I want to see and retain. This is as bad as pop-ups.

Robert Jones
Sunnyvale, Calif.

Mozilla's Firebird browser (DocFinder: 9924) has a free downloadable extension that blocks Flash ads. It shows a solid gray box with the words "Click to play." That particular extension is one of the first ones I download when setting up Firebird on a computer. The other is IE View, which gives you a right-click option to "open link in IE" or "view this page in IE." Browse the list of current downloadable extensions at DocFinder: 9928.

Ron Miller
Collegedale, Tenn.

Wrong tool

Regarding Mark Gibbs' Backspin column "Blame the workman" (DocFinder: 9925), in which he mentions how "NASA had become too reliant on presenting complex information via PowerPoint, instead of by means of traditional ink-and-paper technical reports": Blame belongs to those who think PowerPoint and its ilk are the solution to documenting complex, and possibly life-threatening, problems. If you can't understand the full technical documents, then you

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

opinions!

shouldn't be making life-and-death decisions.

Rob Healey
Minneapolis, Minn.

I spy spyware

Regarding "Fight back against spyware" (DocFinder: 9926): Here is spyware that millions of Americans are going to unwittingly install. TurboTax installs the C_DILLA service in the background that eats up CPU cycles and keeps you from copying the TurboTax CD and giving it to your friend. Ad-aware finds this pest, but if you remove it, your tax program stops working. What has this world come to when software vendors start installing spyware?

Robert Hale
Lexington, N.C.

What customer service?

Regarding the story "MCI's chief seeks fresh start in '04" (DocFinder: 9927): Earlier this year I became an MCI subscriber. I was having trouble establishing service, so I contacted an Iowa office of MCI found in a Google search of "MCI Customer Service." Two weeks later, I received a letter, digitally signed by Jim Meyers, stating what the problem was with my account on the first week that I had tried establishing service. Mind you, by this time I was finally receiving service. I wrote back and gave him detailed information on the problems I had had since it took almost two months to finally receive service. I recently received another letter, again digitally signed by Jim Meyers, stating that at this time service was not available in my area. And MCI thinks it has solved its problems? I just received a request from BellSouth to come back to its services. I might have to out of principle: At least BellSouth knows it lost a customer; MCI doesn't even know it has one!

• MacArthur Wright
Hernando, Miss.



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ON THE ROAD

Sandra Gittlen

Maybe it's the statistics that get me — one legal firm spends \$500,000 a year combating spam. Maybe it's that spam is threatening to ruin a prime mode of business communication. Or maybe it's all the other resources that must be marshaled to deal with spam — bandwidth, storage and support costs, to name a few.

In *Network World's* Technology Tour, "Messaging and Spam: Chaos to Control," which kicks off March 23 in Arlington, Va., *Network World* columnist Mark Gibbs will offer advice on how to keep spam from spinning out of control in your organization and return e-mail to the productive business tool it should be. From the first slide of his keynote presentation, Gibbs makes clear just how tough a row IT has to hoe in fighting spam.

The good news is, help is on the way. Mature, sophisticated, really-attacks-the-problem help that could restore messaging systems to their original productivity levels. Help that could get you out of the Band-Aid business and back into the strategic, "what else can this messaging system do for us" business.

There are great collaboration tools that have been put at bay because IT is busy fighting spam. Your energy has been spent containing the spread of unsolicited e-mail, when there are developers out there adding cool features to messaging systems, such as presence awareness, which lets you link your communications tools so users can access

Controlling messaging chaos

each other's information databases — from anywhere at anytime.

Call centers should be using the amazing advances in collaboration tools that let operators access one another's e-mail files or connect with one another instantly. But these tools look very scary to anyone who is worried about viruses. Why connect more things if it's just going to mean the rapid spread of a worm when an epidemic breaks out?

We've got to move past that mode of thinking, and the Technology Tour can help you do that. Gibbs and I will be joined on stage by leading messaging and anti-spam companies, including MailFrontier, MXLogic, NetIQ, SurfControl and Sybari Software. Also on the tour will be Barracuda Networks, Process Software and SingleFin.

Their presentations — as well as Gibbs' morning and afternoon addresses — will help you rethink your messaging architecture. Each company will offer its approach to not only stop spam but also assist you in rebuilding your messaging strategy.

You'll also get tips on how to safely integrate other messaging tools, such as instant messaging, without jeopardizing the safety of your network. Gibbs also offers a spam calculator that will help you figure out how to keep your costs under control.

The goal of the event is to get IT back to a place where messaging is not a hindrance but a beneficial part of the corporate tool kit. To register, visit www.nwfusion.com, DocFinder: 9658.

Gittlen is editor for Network World's Events and Executive Forums Group. She can be reached at sgittlen@nww.com.

NetworkWorld On the road with SEMINARS&EVENTS

Network World's Technology Tour . . . will offer advice on how to keep spam from spinning out of control.



YANKEE INGENUITY

Howard Anderson

Every year major companies such as Cisco, IBM, Lucent and Nortel spend 6% to 10% of their budgets on research and development, yet are often blindsided by hot young companies. Last month, Juniper paid \$3.3 billion for NetScreen — and I couldn't be happier because Battery Ventures, a firm I co-

founded, had NetScreen stock. But it raises the question of why the industry's large R&D laboratories never seem to get it right.

Imagine you are a CEO of one of the major communications equipment companies. Publicly, you are a big fan of your R&D department — and privately, you wonder what the hell is wrong. Your products are always late and seem enfeebled. You would prefer to grow organically through your own research than to be constantly buying companies and overpaying. The investment bankers camp on your doorstep with the "miracle" new company that can get you back in the game. You are in good company: JDS Unifac paid \$20 billion for E-Tek; Lucent spent \$20 billion for Ascend; and Nortel paid \$5.5 billion for Alcatel, \$3.3 billion for Qtera and about the same amount for Bay Networks.

Maybe the R&D departments of the industry are just plain obsolete. There are three reasons why this is the case. First, they tend to spend 80% of their time tweaking existing products and not building the insanely great new products that their customers want. Second, they are loath to come out with better products while their cash cows are still churning out predictable profits.

The third reason is venture capitalists have the ability to entice the hot teams right out of the labs and build the product these equipment companies should have — faster and better. Bell Labs was a great institution but probably couldn't be put together today with the crack engineering teams that made it famous and feared by competitors. Nor could Xerox PARC or IBM Labs.

The CEOs in the industry know their companies and their jobs depend on getting R&D right — and they have tried everything. Out-

Why are the R&D labs so bad?

source R&D or bring it back in-house? Invest in venture capital funds or suck up to major universities such as Duke and Massachusetts Institute of Technology? Acquire tech companies or just make strategic investment? Whatever they do, it just doesn't seem to work.

An interesting twist on this is what Cisco is trying now. Cisco took an interesting internal development, staffed it with some of its best people, gave it some money — and set it free, with a "buyback" provision built in at a pre-arranged price when the new company hits its benchmarks. Very creative and maybe that is the future model, because it's clear that the old model of a corporate R&D division just ain't working.

When the founders of AT&T formed Western Electric and Bell Labs, they had no competition and little choice. They had to build their own equipment because there was no one else around, and they had to mount their own R&D because no one would do it for them. When Bill McGowan started MCI, he purposely did not start an R&D department because he believed that the industry had grown up — every vendor now wanted his business, and he could buy from the best.

Today, both in the enterprise and carrier arenas, the incumbents (Alcatel, IBM, Lucent and others) have continually shot themselves in the foot, then attempted to solve the problem of having the wrong products by throwing a Hail Mary pass through acquisition — using financial engineering as a substitute for real engineering.

One major problem when you build a company with cobbled-together technical platforms is that they just do not "hum" together. Integrating all these platforms results in continual delays, unanticipated costs and a need for even more staff, as companies are forced to become their own systems integrators. If the communication industry's laboratories had worked as they were supposed to, we wouldn't have this problem, but I suppose it was inevitable.

Anderson is senior managing director of YankeeTek Ventures, a Cambridge, Mass., venture capital fund for early stage technology companies. He can be reached at handerson@yankeetek.com.

The CEOs in the industry know their companies and their jobs depend on getting R&D right — and they have tried everything.

WHAT ARE THEY THINKING

KNOWING HACKERS' FAVORITE ATTACK
PATTERNS AND MOTIVATIONS CAN
LEAD TO BETTER NETWORK SECURITY.

■ BY DEBORAH RADCLIFF

Hackers, crackers, carders and thieves

are putting the squeeze on your network security. But what do you really know about them? What draws them to your network, and why do they do the things they do?

PROFILE THE EXTERNAL ATTACK

For the most part, hackers break into corporations for one reason: Status. "The hacking community is a strong meritocracy where status is determined by level of competence," Kilger says.

As such, most attackers go after corporate networks indiscriminately. They're looking for the weakest link. And when they do break in, they share their results with others in their community to prove their prowess.

"These poorly protected victim companies are what I call 'targets of opportunity,'" explains Charles Neal, vice president of security for the managed security services

division of Cable & Wireless, which has investigated numerous attacks on customers.

Such was the case when security consultant Greg Gilliss investigated a digital break-in at a large financial institution last year. The mutual funds firm didn't call law enforcement because it conducts business with the government and didn't want them to know about it.

The company suspected foul play when its vice president walked into his office and saw the cursor moving files around on his Windows 2000 workstation.

"This was definitely a target of opportunity," Gilliss says. "The client had weak passwords, no patches, and they were running services they didn't need, all of which were unprotected. Worst of all, they were running pcAnywhere visible to the outside world and with no encryption through their one router firewall."

It was the pcAnywhere application that eventually granted the attacker full access to the 700-node network. All the intruder had to do was install a sniffer and wait for the administrator to log on to the vice president's workstation to do remote administration. Breaking the password was trivial, Gilliss says, because the administrator's username and password were the same three letters.

Using network logs, Gilliss drew a scatter plot of the trespassers' behavior inside the network and gathered this profile:

- They were cautious and knew U.S. calendar holidays, during which they logged on to avoid detection.
- They couldn't be kids because script kiddies aren't so patient.
- They were in a time zone 10 hours away.
- They never stayed longer than an hour.
- They logged in with a different IP address each time.
- They'd been there for more than a month.

After three weeks, they started logging on during work hours, which meant they didn't care about getting caught anymore.

With this information and a little investigation, Gilliss ascertained that the attackers used different compromised DSL lines each time they returned, and all of these lines tracked back to a single ISP in Europe. His recommendation to his client was to fire its IT consultant, run a penetration test against the network, patch its systems, close vulnerabilities and restrict remote access.

Knowing the motivations of digital intruders helps you understand their behaviors, says Dr. Max Kilger, a social psychologist for the Honeynet Project. And understanding those behaviors can help you better protect your networks.

With this in mind, *Network World* dug into three real cases to analyze the attackers' behaviors and motivations. The incidents include an outsider attack on a financial institution, the rooting of an e-commerce hosting provider to heist credit card numbers and an employee copying a client database from a brokerage firm to take to a new job at a competitor.

Identifying what is common and what is unique about these attacks gives you information you can use to further your own protection, detection and forensics practices.

Radcliff is a freelancer writer in California. She can be reached at deb@radcliff.com.

PATTERNS OF BEHAVIOR

1



COUNTERMEASURES

- Select the target using IP lookup tools such as NSlookup, Dig and others.
- Map network for accessible services using tools such as NMAP.
- Identify potentially vulnerable services (in this case, pcAnywhere).
- Brute force (guess) pcAnywhere password.
- Install remote administration tool called DameWare.
- Wait for administrator to log on and capture his password.
- Use that password to access remainder of network.

Restrict remote access to specific IP addresses using the technology.

Monitor logs for unusual behavior, such as a single user logging on locally and remotely at the same time.



CREDIT CARD CROOKS

What identity thieves are seeking is money, of course. But those who broker in stolen credit cards also are strongly motivated by status, says Dan Clements, CEO of CardCops.com, a credit card protection service agency that scours the Internet for compromised credit card and personal data and reports it to victims and banks.

"Carders would love to root servers at e-commerce sites and own them, especially when credit cards are sitting there unencrypted," Clements says. "Then they post them to carder Web sites and say, 'Hey, rate me.' The better your rating, the better your trading privileges."

Increasingly, carders are part of organized crime rings mostly from former Soviet Union states, Kilger says. In these cases, after the cards are used to purchase expensive items, they're posted at carder sites to obscure their usage patterns and therefore confuse investigators.

Attackers going after e-commerce sites also indiscriminately look for the weakest security. "I call these 'targeted victim attacks.' They gain root with the specific intent to steal something," C&W's Neal says. "I would expect the pattern of intrusion activity to be similar to a 'target of opportunity' attack."

Such an opportunity presented itself in January 2002 to a carder who had rooted at least one server at an e-commerce hosting provider. The case began to unfold in September, when CardCops investigators culled some 60 invoices (complete with purchaser's names, addresses and phone numbers) off Carderplanet.com, a carder Web site since removed.

"We noticed that the invoice numbers had the same long-digit formats. So we started calling the consumers whose card numbers, phone numbers and addresses were on the invoices. We asked them where they shopped. We were able to trace them all back to several merchants at a single hosting provider called Serve.com (since renamed as Datarealm).

When he called the merchants whose invoices were heisted, they complained that they'd suspected problems for months because cards were approved at the time of purchase, but then declined two weeks later when they rechecked the cards before shipping backorders.

Clements e-mailed Serve.com's system administrator, who attributed the problem to a flaw in the shopping cart software that affected only 24 of Serve.com's 4,000 e-commerce clients.

Then in November, a skin care merchant hosted at Serve.com found an alteration to her directory — a page added on Jan. 23, 2003, titled "index-old." She clicked on the page that read, "MuShroom said That No RedeFace (sic) !! nitr0x Ownz serve.com ...lol."

Clients of Serve.com, along with its CEO and systems administrator,

didn't return *Network World's* calls about the incident, so details are not forthcoming as to how the carder gained root.

However, Neal surmises that once the perimeter is exploited, carders act more professionally because they don't want to be caught (see graphic, right.)

See Hackers, page 44



"We noticed that the invoice numbers had the same long-digit formats. We started calling the consumers whose card numbers, phone numbers and addresses were on the invoices."

CLEMENTS, CEO, CARDCOPS.COM

PATTERNS OF BEHAVIOR

PROFILE

2



CREDIT CARD CROOKS

- Act quickly and precisely to make their activities harder to detect.
- Exploit perimeter through vulnerable ports, services and buffer overflows.
- Use Trojan horses (hidden software) to leave back doors for re-entry.
- Use sniffers to capture passwords.
- Stick around until noticed.
- Make few or no mistakes.

For SELF-SUPPORTING e-commerce sites:

- Spend resources protecting that which is most valuable (the customer database).
- Encrypt credit cards in databases.

For HOSTED e-commerce sites:

- Contractually bind your hosting service to conduct quarterly vulnerability assessments.
- Don't collocate. Use a dedicated server.
- Purchase extra security options.

COUNTERMEASURES

CYBER CRIME PROFILING IS DEFINED AS

the investigation, analysis, assessment and reconstruction of data from a behavioral/psychological perspective extracted from computer systems, networks and the humans committing the crimes, according to William Tafoya, professor in the national security graduate program at the University of New Haven in West Haven, Conn.

Tafoya contends that serial computer crackers' M.O.s are the same as that of serial murderers and rapists, meaning:

- They're creatures of habit.
- They repeat what works.
- They repeat what feels good.
- They operate up to their abilities.



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FILCHING FILES FROM WITHIN

Revenge is one reason employees misuse and abuse systems, as was the case when Kenneth Patterson, former data communications manager for American Eagle Outfitters, disabled his company's ability to process credit card purchases for the first five days of the holiday shopping season in 2002. But the most common motivator behind the inside job is a sense of entitlement, experts say.

"The threat from inside is not just disgruntled employees wanting to get even," C&W's Neal says. "Businesses have always had what you could call shrinkage. Employees rationalize stealing pencils, paper clips and bottles of Coke. But with digital assets stored in computers, this process becomes more impersonal, repeatable — and scalable. Now you can steal a case of pencils instead of a box of pencils, metaphorically speaking."

So strong is this feeling of entitlement that employee theft of data makes up about 75% of the cases investigated by Anton Litchfield, director of forensics consulting services for NTL, an electronic evidence discovery firm.

For example, last summer a vice president of sales for a stock analysis firm quit to go to a competitor. But before she left, she copied the customer database to take with her.

Suspicious were raised when one of her co-workers told his network manager that he'd seen a Windows dialog box copying large files to a folder on her home computer the week before she left — while nobody was at her desk. She'd accessed her office computer from her home computer using GoToMyPC.

That's when the network manager contacted NTL.

"Through forensics analysis of her home computer, her office computer and the network logs, we were able to prove that she'd accessed those files from home and copied them onto her home computer just before she quit," Litchfield says. "But if that employee hadn't seen her computer copying those files, nobody would have been the wiser."

In cases of both a disgruntled employee causing damage or one who feels entitled to steal, you won't see much digital evidence of a crime, Neal says. That's because they already have the access and the insider knowledge. For example, in the American Outfitters case, for which Patterson was sentenced to 18 months in prison in December 2003, he used his own password to access the

PATTERNS OF BEHAVIOR

PROFILE

3



- Create network accounts for themselves and their friends.
- Access accounts and applications they wouldn't normally use for their daily jobs.
- E-mail former and prospective employers.
- Conduct furtive instant-messaging chats.
- Visit Web sites that cater to disgruntled employees, such as f'dcompany.com.
- Perform large downloads and file copying.
- Access the network during off-hours.

- Enforce least privilege, only allowing access to the resources employees need to do their job.
- Set logs to see what users access and what commands they're putting in.
- Protect those resources that are most important with strong authentication.
- If you see someone accessing something they shouldn't, have that person's manager discuss it with the employee to deter future bad behavior.
- Upon termination, delete all computer and network access.
- When employees leave the company, make a mirror image of their hard drive before reissuing it. That evidence might be needed if your company information turns up at a competitor.

COUNTERMEASURES

system and cause the damage. The female vice president also used her own remote logon program to get to the files she downloaded.

MEECES to pieces

MAX KILGER LIKES TO GET INTO THE HEADS OF computer criminals. He chats with these people at conferences and online, and studies their behavior when they hack inside HoneyNet's decoy computers. Throughout his many years of research, he's developed a motivational profile he calls "MEECES" — for money, ego, entertainment, cause, entrance to social groups and status. MEECES is a modification of the FBI and military security's counterespionage profile called MICE — which stands for money, ideology, compromise and ego. Kilger outlines behavioral motivators in a 60-page chapter on hacker profiling in the second edition of the HoneyNet-developed book *Know Your Enemies*, due from Addison Wesley in May. Here's the upshot of those motivators:

MONEY — Stolen credit cards are the currency for certain crime rings and social groups of carders. They trade them for access to other compromised credit card databases.

EGO — Spanning the entire spectrum of the community from black hat to white hat hackers, ego is the driving force. If you've got a problem, look inside. If you're not sure how something works, figure it out. If you want to do something it

ENTERTAINMENT — The bored teenager syndrome is not as strong as in the days of big disk drives and mainframes, but it remains a motivator. "You'll still see a hacker break into a system, trash it up and sit back and watch the system administrator scurry around trying to save it," Kilger says.

CAUSE — Think hactivism, mostly Web site defacements and distributed denial-of-service attacks for pol-

itics and ideologies.

ENTRANCE INTO SOCIAL GROUPS

— Hackers achieve this by sharing their successful break-ins with the groups they want to be included in.

STATUS — This is the strongest motivator among all hackers, crackers and carders because their main emphasis is on skills. The higher profile the target, the higher their status.

EDITOR'S NOTE: Adrian Lamo, a white hat hacker who pled guilty to accessing *The New York Times* computers without permission, agreed to share what he knows about some of the common IT security slips network administrators make. Lamo studies journalism at American River College in Sacramento, Calif., as he awaits sentencing next month.

Profiling network administrators

BY ADRIAN LAMO



One well-ranked Fortune 500 company was recently hiring a network security professional. The interview process required applicants to wait in the HR lobby, where they could use public workstations to browse job listings.

Although the company had spent a hefty sum on a Cisco PIX firewall installation, it made the mistake of placing these visitor workstations on the internal network where files could be accessed. Rather than invest less than \$100 per month to equip the public workstations with their own broadband connection, the firm left a fine trophy for anyone with an interest in competitive intelligence.

Knowledge about potential security threats is generally required for the defense of any complex system. But intruder intelligence is only useful as long as it's not running the show. Otherwise, you'll be predictable by the same schemas you use to predict the actions of others.

For instance, many would-be intruders know that administrators configure their intrusion-detection systems in very linear ways, assuming that intrusions will come in the form of scans, buffer overflows and predefined attack patterns.

One way around this is to simply push random requests through the Web browser, a legitimate point of access. At one company, the Web mail system let users forward their mail to any address with only their Social Security number and last name. However, a quick search revealed a corporate directory that included Social Security numbers of all employees and contractors, including the CEO.

Some companies even put in extra layers of security such as token authentication devices. But again, they perceive the problem incorrectly by forgetting that attacks can't be counted on to originate at the edge of the network.

In the late 1990s, intruders remotely bypassed AOL's SecurID authentication system by developing software that would let them redirect their Internet connections through AOL employee workstations, masked as innocent Web connections. Suddenly AOL's network was riddled with private gateways. AOL's logon servers saw their connections as originating from inside the network, and didn't bother to ask them for a SecurID code. As a result, hundreds of high-profile AOL accounts were compromised.

The belief that attacks will inherently come from the outside sets networks up to fall. Security is not always a linear process. If you're going to profile intruders, profile defenders too — be they good examples, or terrible warnings.

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CLEAR CHOICE

TEST

Secure Shell software

New SSH Communications' offering adds ease of use to its Tectia package

■ BY RODNEY THAYER, NETWORK WORLD LAB ALLIANCE

In our test of SSH Communications Security's Tectia 4.0 — its upgraded Secure Shell client and server combination — we found it is easy to use; provides convenient, restartable file transfers; and offers more GUI features than competing commercial and open source SSH implementations.

Tectia 4.0 also supports a variety of port-forwarding schemes that let you set a VPN-like tunnel to your managed machines.

On the downside, some of the authentication options were very difficult to configure and use.

The SSH code — developed by SSH Communications in 1995 — provides console (or 'shell') communications between a network device and a local PC over the Internet, using cryptographic techniques to secure user authentication processes and data traffic flow between the machines. Tectia 4.0, announced in October and released in December, supports the current version of the protocol, SSH 2, and the older SSH 1.

We tested Tectia 4.0 client and server versions for Windows and Linux (see How we did it at www.nwfusion.com, DocFinder: 9929.) SSH Communications also offers Tectia Connector, a product that supports application tunneling, and

Tectia Manager, software for managing distributed Tectia client/server installations.

Installation of Tectia 4.0 on Windows systems was straightforward. But the software was more difficult to get running on Red Hat Advanced Server because you have to uninstall OpenSSH to run Tectia.

The documentation was accurate and plentiful, and gave solid information about the core functions overall, but the parts pertaining to the new features were a bit sloppy. For example, while the documentation suggests that the product supports IPv6, the vendor does not recommend it for production environments.

You manage Tectia servers like any other Unix/Linux Daemon or Windows service. On Unix, the Tectia code generates syslog messages so you can track procedures such as user logons or logon failures. In Windows, the Tectia server generates messages to the Windows Event Log. The servers emit messages when the configuration changes, which could become a problem when strict change controls are required.

Tectia 4.0 provides a Windows GUI-based file transfer tool so you don't need to run a command-line application to perform SSH file transfers. This improves its ease of use over previous versions.

Previous versions of the product let you set up SSH tunnels as an alternative to IPSec VPNs. Tectia 4.0 makes this much easier to use. The client can be configured in a "port forward only" mode so you can deploy it to desktops with minimal user configuration. It also supports Socks, a connection proxy mechanism that browsers and e-mail clients use, which makes it much easier to configure other software on the client system to support SSH port forwarding.

Tectia 4.0 supports several cryptographic algorithms, including Advanced Encryption Standard (AES), the current al-



The SSH Tectia 4.0 products work best at companies with cross-platform SSH console access requirements.

to sensitive network equipment, traveling executives or military applications. We tested just the username/password, SSH key mechanisms and X.509 certificates.

We exercised connection combinations using Tectia clients and servers, and we tested interoperability with OpenSSH and Putty (two open source SSH implementations) and other SSH products. Everything worked as expected with the password and SSH

key mechanisms. However, X.509 support was more difficult to set up. After several calls and e-mails to the vendor's support team, we got X.509 certificate authentication to work. It is very complex and not completely documented. While the product does function as advertised, this mechanism is probably too difficult to deploy to be useful in most environments.

Overall, we concluded that Tectia 4.0 is a commercial-grade SSH implementation that offers the strong security features of the SSH protocol with a pretty rich set of authentication and usability features. It would be a good fit in environments where you have cross-platform (Windows, Unix, and network devices) SSH console access requirements.

Thayer is a security researcher at Canola & Jones in Mountain View, Calif. He can be reached at rodney@canola-jones.com.

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Thayer is a security researcher at Canola & Jones in Mountain View, Calif. He can be reached at rodney@canola-jones.com.

Net Results

Tectia Client and Server Version 4.0

OVERALL RATING
4.35

Company: SSH Communications Security, (650) 251-2700, www.ssh.com
Cost: \$116 for Tectia Client; \$657 for Tectia Server for Windows; \$559 for Tectia Server for Unix. **Pros:** Easy-to-use GUI; secure, restartable file transfers. **Con:** Complex configuration process for some of the authentication options.

The breakdown

Security features 40%	5
Management/ease of use 40%	4
Authentication options 10%	3
Installation 5%	3
Documentation 5%	4
TOTAL SCORE	4.35

Scoring Key: 5: Exceptional; 4: Very good; 3: Average; 2: Below average; 1: Consistently subpar

NW Lab Alliance

Thayer also is a member of the Network World Lab Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Lab Alliance information, including what it takes to become a partner, go to www.nwfusion.com/alliance.

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Face-off

Are anti-spam appliances better than software?

Two industry insiders debate the merits of their anti-spam approaches.



Yes, by Tim Chiu



No, by Ken Schneider

Appliances are a much better choice than software for spam protection because they address the broad range of security threats facing large companies, small businesses, service providers, and educational and government institutions. Deployed at the edge of a customer's network, gateway appliances provide the most efficient, easy-to-manage approach to solving spam problems by offloading the existing mail server and addressing security threats before they enter an organization's network.

Customers want effective spam products — products with proven high catch-rates and zero false positives. Appliances pre-integrate a variety of e-mail security technologies into one, purpose-built unit to get the best spam accuracy, with no impact on a customer's message network and e-mail service reliability. Combined security features help customers get better overall protection and simplify the IT administrator's life. Appliances can be deployed in minutes, compared with hours or days with software-only approaches.

Even with all spam technology being equal — regardless if it's software-based or an appliance — appliances let customers deploy protection more quickly and take advantage of built-in optimization for performance and reliability, currently unattainable with software on general-purpose servers. Furthermore, software-based approaches have inherent vulnerabilities when deployed on general-purpose platforms. Operating systems such as Solaris and Windows have widely known susceptibilities to viruses and hacker threats that make them vulnerable to increased attacks. Appliance-based products employ a pre-hardened operating system that has no exposed executable environment or open ports that a hacker can exploit.

Appliances provide a more complete, holistic approach to e-mail security. Customers appreciate the "one source, one solution" approach. According to a November 2003 report by Michael Osterman of Osterman Research, 70% of customers prefer to purchase messaging-threat products from one source. Single-source, integrated e-mail security products include capabilities for managing traffic and performing advanced analysis beyond just spam filtering — including reverse DNS lookup, Simple Mail Transfer Protocol authentication, virus scanning, content filtering, policy enforcement, detailed logging and reporting, and more.

In contrast, software-only spam products tend to be narrowly focused on spam filtering and overlook related threats that can seriously expose an organization's message network to an increased deluge of spam traffic, spammer exploitation or a variety of other threats.

Appliances are a more effective solution for stopping spam and a more complete e-mail security approach. They require dramatically less ongoing management than software, delivering much faster ROI and a low ongoing total cost of ownership. Any organization thinking seriously about e-mail reliability and security should standardize on appliances.

Chiu is a senior manager at Mirapoint, an e-mail security appliance vendor in Sunnyvale, Calif. He can be reached at tchiu@mirapoint.com.

The growth of spam in the past five years has created such a deluge that anti-spam technology has become a necessity rather than a precaution. Enterprise customers face a choice between anti-spam software that can be deployed across any operating system and hardware platform, and anti-spam appliances that come preconfigured and ready to be installed into a rack.

There is a sound reason for this competition — different customers have different requirements. Whereas one company might want an "out of the box and into the rack" appliance with preset controls, another company might want the flexibility provided by software with comprehensive administrator settings that can be deployed on the platform of choice. However, the crucial element to any effective anti-spam solution — software, appliance or other — is software.

Anti-spam appliance providers often tout their products as easy to install and deploy, with a low cost of security because the box is self-contained. These hardware characteristics say little, however, about the product's effectiveness in actually stopping spam. Appliances still require strong software to get the job done.

Effective software provides the flexibility necessary to thwart today's sophisticated spam attacks. Administrators need the ability to manipulate filters, monitor quarantines and receive constantly updated rules. The fight against spam is a fast-paced battle with technically proficient spammers working to defeat the latest in anti-spam technology. Companies can't afford to have a product that doesn't provide the flexibility to stay ahead of spammers.

Without effective software, hardware products such as anti-spam appliances would not be possible. Imagine a race car with an economy-car engine or a modern server powered by an Intel 286 processor. If you do not have software that is sophisticated enough to take full advantage of the hardware platform, you are left with an underpowered and under-utilized device. Effective anti-spam software is platform-agnostic — it can be deployed with any operating system, used with various e-mail applications and installed on any hardware platform, including appliances.

Anti-spam software uses a multilayered approach, with controls to stop spam at the e-mail gateway, the ability to quarantine messages and more control given to end users.

The most complete anti-spam software provides the best of these key characteristics — effectiveness (most spam stopped), accuracy (fewest false positives) and zero administration (automated and timely updates) — all in a platform-agnostic package.

Spam already costs U.S. companies more than \$20 billion per year. If your company's anti-spam product is underpowered and ineffective, you will contribute to this figure either through lost productivity or increased vulnerability. To obtain the level of performance necessary to protect your company, strong software must be the key component of your anti-spam solution, regardless of your hardware choices.

Schneider is CTO for Brightmail, an anti-spam software vendor in San Francisco. He can be reached at cto@brightmail.com.



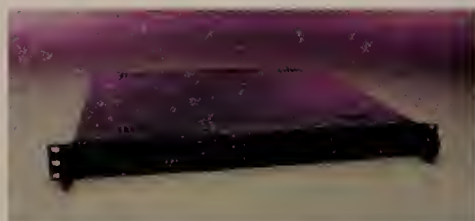
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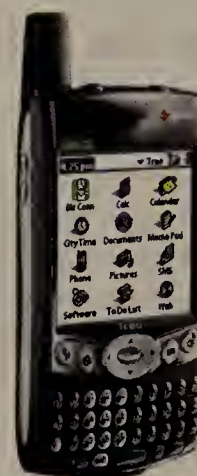
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Clearing the clutter

Don't let your storage rooms get overrun by obsolete equipment.

■ BY SANDRA GITTLEN

Vintage printers. Old PCs. Back-up tapes without the systems to read them. Out-of-date telephone systems.

These were just a few of the items that Greg Johnson found stored in what he called the graveyard room at his former employer. The dumping ground was on the same floor as executive management, who passed by it every day. "It was the most equipment I had ever seen in the smallest physical space," Johnson says. "It was using up premium office space."

"I haven't worked anywhere since where I've allowed a graveyard to exist," he says. Johnson, who is now corporate director of operations centers at Baylor Healthcare System in Dallas, has helped to create an automated system within the IT department that monitors the life span of every piece of equipment.

The program is Web-based and displays a floor plan of Baylor's four data centers with representations of the 300 systems running in the network. Rolling a cursor over a portion of the floor plan provides all the information related to the equipment and software, including serial numbers, which is stored in databases.

Each piece of equipment brought into the network is given a birth date and an end-of-life date pertaining to leases or a typical life span.

As the end-of-life date approaches or a lease is about to expire, the system automatically sends out an e-mail alert to the person responsible for that gear, who decides whether to renew the lease or retire the equipment. When the system is finished in production, it is eliminated from the floor plan and database.

Johnson says this forces people to ask the question: "Are we going to still use this?" Old equipment piles up when people don't do that. "They retire an old AIX box that's marginal. You know when you've got something that's so old and unusable without enough horsepower."

While you won't find a graveyard room at Baylor, Johnson still has a storage room with a few contents. "The things that are in there are [duplicate] pieces of equipment we use to scavenge parts for stuff that's still in production."

By staying on top of the life span of the equipment, Johnson says he avoids the hassles that come with trying to get rid of stuff later. At the end of the lease, his team trades in equipment for a new lease, returns it for a credit toward training from the vendor or buys it for his engineers to use to test-drive new applications.

When the equipment Baylor owns outright reaches the end of its life, Johnson sells some to resellers. He and his team carry other equipment to the dumpster.

This idea makes Bill Sadlick cringe. Caught in the cross-fire of downsizing within the telecom industry, Sadlick, a network manager at Charles Industries in Chicago, has 200 extra PCs lying around from all the empty offices. "We cannibalize them to death," he says, making use of memory, net-

work cards and any other needed components.

"I report to the CFO so when I say there's a cost element to it — if it's useful, I can't throw it out. I can't go and say I need to buy 20 new PCs," he says. Sadlick's asset-tracking system helps him get at least five years out of each PC.

Sadlick tries to keep his graveyard rooms orderly. "One stores monitors, one stores systems, one stores software. I work for a manufacturing company, so we tend to store inventory," he says.

Mike Sapien, a consultant for the datacom industry, says he has clients like this. What the companies are lacking is a clear exit strategy for their retired equipment. His theory on older equipment: "Kill it now before it gets too painful."

"You always have to explain to the financial people why you're throwing something out — if it works, why are you replacing it?" Sapien says. But he adds that keeping equipment around too long raises other costs, such as help desk and service calls.

Trash talk

Recent regulatory issues pertaining to privacy and the environment have put a damper on how companies get rid of their old equipment. Hard drives must be wiped clean so that data is not compromised. Computers containing hazardous materials cannot be dumped in landfills. As a result, companies are turning to professional recyclers to tear down computers.

"The biggest challenge IT has is recognizing that they're going to have to pay to have equipment hauled away," says Frances O'Brien, an analyst at Gartner. She says that companies should plan to spend upward of \$30 to \$120 to dispose of a single PC — depending on the level of sanitization they want.

"A lot of times what happened in the past, employers just said, 'let's just give this to employees,' and since they're trusted employees they didn't clean off the drives," she says. "What happens years later when the employee gives up the PC?"

Aside from liability, there are other reasons O'Brien doesn't suggest handing out retired equipment. "It's labor-intensive, taking off the old data, doing a software overwrite," she says. "What the person's left with is a PC with no operating system and no applications." What's more, employees might expect IT to support these clunkers.

O'Brien says there has to be a shift in the IT industry to look at product retirement as an ongoing process. "Don't wait till you fill up your closet," she says. She cites three options: Charitable contributions, outsourcing and tear down.

Large vendors such as Dell, HP and IBM have all developed disposal offerings outside of their new PC sales and leasing groups. Also, manufacturers are starting to take back equipment, O'Brien says.

She cautions that this is not a free service. "You're going to be paying for it one way or another — with an upfront fee or a visible recycling fee at the end," she says. ■

Spring cleaning

Professionals recommend starting an end-of-life-span strategy for your computer equipment the minute you bring it in-house. Here are some tips:

- Assign a birth date and end-of-life date — when a lease expires or the value of the equipment will deteriorate — to each piece of gear you purchase, and enter that information into a database.
- Set the database to alert the manager when an end-of-life date is approaching. Leave enough time to consider installing new systems or renegotiating contracts.
- Take action immediately. Send the box back to the vendor, renegotiate the lease, or allow your engineers to use it for training or testing. Don't just let it sit around.
- Take stock of your storage room. If you are moving equipment into storage, make sure you enter information about it into a manifest, noting what components are salvageable.
- Make sure hard drives are clean, even in the storage room. That way if someone steals the computer, you aren't liable for the information on the hard drive.



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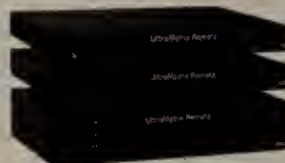
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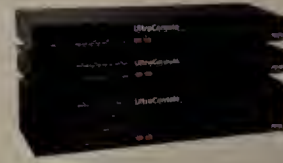
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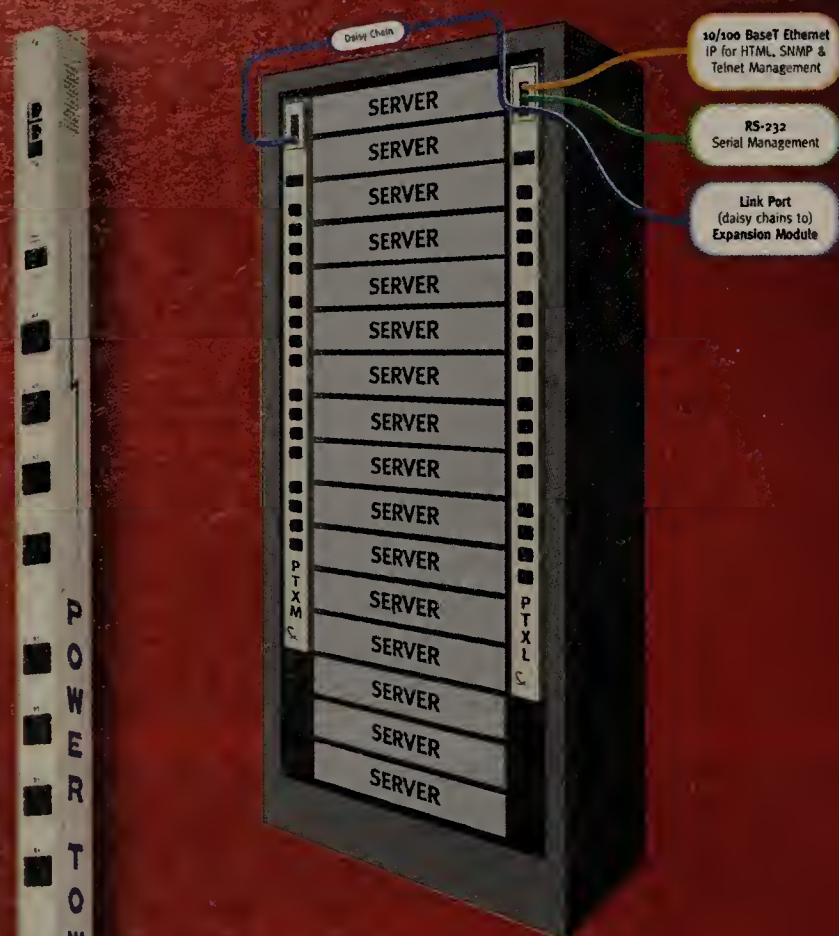
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IT Careers in Northern California

The promise from high tech corporate leaders was that the offshore movement of jobs would lead to more high-end jobs versus a simple loss of work. While the debate continues, there are some interesting trends in northern California that point to a future that is shaping itself differently, but that includes opportunity.

Among the trends is an on-shoring of executive jobs. Over the past two years, a number of foreign high-tech firms have hired CEOs to staff northern California offices – ranging from TakAsic, a French chipset maker, to the government of New Zealand's office in Redwood City, known as Silicon Valley Beachhead. Foreign companies say that while they can offer services and produce at a lower cost, the northern California region offers them two things they need – funding and a workforce that knows how to create technologies.



The influx of foreign companies, along with a migration of jobs from straight software and

hardware development to use of high tech in other fields, has slowed the job drain from northern California. Economic development leaders say that 20% of employers in the northern portion of the state plan to hire in 2004. The challenge, they say, will be to transform the educational system and community services to meet the new opportunities.

It's not the first time the northern California peninsula/valley region has remade itself. Formerly a haven for defense contractors, the area later turned to development of communication devices, hardware and in the 1990s software. Today the region employs better than 100,000 software developers. Doug Henton, president of Collaborative Economics, estimates that new jobs will develop in the next five years but will take software development into new areas – such as genomic research and new-age satellite positioning and communications.

Genomic Health Inc., one of many medical high tech companies in the region, was founded in August 2000 to provide genomic analysis of tumor biopsies. The company illustrates the overall shift in Silicon Valley futures when it comes to jobs. Senior biostatisticians need higher-level statistics degrees, as well as programming expertise with SAS and S+ programming. Assay developers, who will develop the trial and research methodology, need bio life sciences experience, but also experience with programming and data mining.

Also in hiring mode, Lockheed Martin Space Systems in Sunnyvale has similar job complexity. Software engineers need experience in development, but in critical design skills

as well, to include modeling and simulation. While Space Systems' commercial business remains flat, work on new communications networks that enable security and defense are growing. Dozens of jobs – from tech support to high level integration – are listed on the organization's website.

Karen Strella, principal at executive search firm Egon Zehnder, says the growing pharmaceutical and biotech community in the region is key to future job growth. "Since 2003 was the worst year ever, we're seeing 100% growth this year in terms of the number of assignments we're getting as well as those of our competitors. Technology is the enabler to moving new drugs through trials quickly, and it's also the foundation for bioinformatics used in biotech. IT professionals with a combination of tech and life sciences understanding are in high demand. We're also seeing a huge need for leaders of research and development organizations. There's a very small universe of people who do this well.

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Sr. Software Engineer sought by network security device manufacturer in Broomfield, CO to work in Broomfield and other unanticipated job sites in the U.S. to engage in full life cycle development of system security software products, for high-end, fault-tolerant data communications networks that utilize TCP/IP protocol, routers, switches and Checkpoint Firewall-1. Integrate Firewall-1 internals into software products utilizing C/C++ on UNIX platform. Analyze requirements, code, test and debug the software. Engages in project management as required. Requires bachelor's or foreign equivalent in computer science; 2 yrs exp. in software development utilizing TCP/IP, Checkpoint Firewall-1, C/C++ on Unix platform. M-F; 8am-5pm; \$106,000/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to JON CO5068582.

Director of Engineering sought by internet media infrastructure company in Boulder, CO to oversee the work of three technical leads who are designing and developing a platform to be used in a Web environment that will enable an interactive near-tv quality experience on the Internet. Design and develop multi-media software applications using C++, HTML, IP and Internet technologies, Realtime graphics and multi-media programming and technologies, and video and computer graphics subsystems. Development of this multi-media platform also uses MFC, open GL, Direct X, COM, and ATL. Requires 1 yr exp designing and developing multi-media software applications; working knowledge of C++, HTML, IP and Internet technologies, realtime graphics and multi-media programming and technologies; M-F; 8am-5pm; \$63,000/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to JON CO5068301.

Computer System Analyst to conduct organizational studies, and analyze user requirements, procedures and problems to automate or improve existing systems and review integrated database system capabilities. Prepare the statistics data and presentation for training grant support. Prepare and collect the statistical billing data for the Educational Technology research. Conduct quantitative analyses of information affecting the strategic plan. Requirements: minimum of Master's degree in Computer Science, Management of Technology or related field. Must have strong Applied Statistics background and Cold Fusion, ASP and PHP programming languages. Please send resumes to: Educational Technology Unit, Biomedical Research Education & Training, Vanderbilt University, 340 Light Hall, Nashville, TN 37232-0301. Reference: CSA

Computer Professionals (Multiple Openings)

Software Engineer/Systems Analyst/Database Administrator/Network Administrator
Casper, WY.

Must have bachelors degree or equivalent and experience in some of the following skills: C/C++, Java, Web Methods, Cold Fusion, Microsoft Technologies (Visual Basic, .NET, ASP), CRM (Siebel, Clarify, Vantive), Middle Ware Technologies (Orbix, Corba, Tibco, Vitria) Data Ware Housing Tools (Informatica, Data Stage, Abinitio, Business Objects, Cognos, Micro Strategy, Brio) ERP (SAP, People Soft, Oracle Apps, Baan), Mainframe (Cobol, CICS, JCL, VSAM) AS400, Ecommerce, Databases (SQL Server/Oracle/DB2/Sybase), Microsoft Windows(95/98/NT/2000, Exchange), UNIX (Sun Solaris, HP, AIX), Linux and QA (Win Runner, Load Runner, Silk, Quickpro, Manual Testing).

Must be willing to travel and/or relocate to various places in the United States. Mail your resume to:

Human Resource Director
AMSOL, Inc.
2510 E. 15th Street, Suite # 5
Casper, WY 82609-4111

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Duties: Develop, create and modify general computer applications software or specialized utility programs, including financial and business applications. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. Analyze and design databases within an application area. Use of COBOL/COBOL II, VSAM, DB2, CICS and JCL. Reqs. Bachelor or equivalent in Computer Science or related field. Plus 2 years in the job offered or 2 years in a related occupation, including Programmer Analyst, Systems Analyst or Consultant. Will accept 2 years college education and 6 years related experience in lieu of required education and experience. \$81,000/year, 40hrs/wk, 8AM-5PM. Respond by resume to WORKFORCE DEVELOPMENT PROGRAMS, PO Box 46547, Denver, CO 80202, and refer to Job Order No. CO5068348.

COMPUTER

Siebel Systems, Inc. has employment opportunities for Tech Instructors in Alpharetta, GA. Education and experience requirements vary. Apply online at <http://www.siebel.com/address> or forward your resume referencing Job# 2521 to: Siebel Systems, Inc. Attn: Corporate Recruiting, 2207 Bridgepointe Parkway, San Mateo, CA 94404. EEOE

Business Management Systems Consultant, Atlanta & various sites in US: consult w/ & determine management systems needs & problems for corp. clients; recommend new or revised technology to manage business operations; coordinate implementation, maintenance, upgrade, support of system, training of users & documentation; ensure quality customization done w/in budget, time constraints; Req: Bach Degree in Bus Admin, MIS or BIS or related + 2 yrs in job offered or as Management Consultant - corporate management consulting. Mail resume to Netlink, 7306 Roswell Rd, # 6, Atlanta, GA 30328.

Computer Security Analyst sought by network security device manufacturer in Broomfield, CO to work in Broomfield and other unanticipated job sites in the U.S. to monitor actual and attempted access to computer networks in computer security operations center. Monitor and implement security measures to safeguard information in computer system networks to protect against accidental or unauthorized modification, destruction, or disclosure. Receive telephone calls from users having computer system security problems on computer security operations help desk/response team, answer questions, applying knowledge of computer software, networking, hardware, and procedures. Utilize tools such as firewalls, virtual private networks and security intrusion detection systems. Monitor and modify security parameters remotely, respond to fault alarms. Talk to internal and external computer security organizations to recommend changes to programs. Requires 2 yrs exp. on help desk/response team answering questions, applying knowledge of computer software, networking, hardware and procedures; working knowledge of firewalls, virtual private networks and security intrusion detection systems. M-F; 8am-5pm; \$85,000/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to JON CO5068599.

WEB DEVELOPMENT ANALYST III

ADT Security Services, Inc. has multiple openings in Boca Raton, Florida for Web Development Analysts III.

Analyze business procedures and problems to develop specifications and convert them to programmable form for electronic data processing. Confer with organizational units involved to determine specific web output requirements. Study existing data systems to evaluate effectiveness and develop new, or modify current, web systems to improve production workflow.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field, and relevant work experience. Experience must include J2EE Certification (Sun Microsystems, etc.); web development experience, including Electronic Data Interchange (EDI); and experience with Oracle, SQL, WebSphere Administration and XSLT.

Resume and/or cover letter must reflect each requirement above and specify reference code WDA/SSS or it will be rejected.

Forward resume to Theresa Maia, ADT Security Services, Inc., One Town Center Road, Boca Raton, FL 33486.

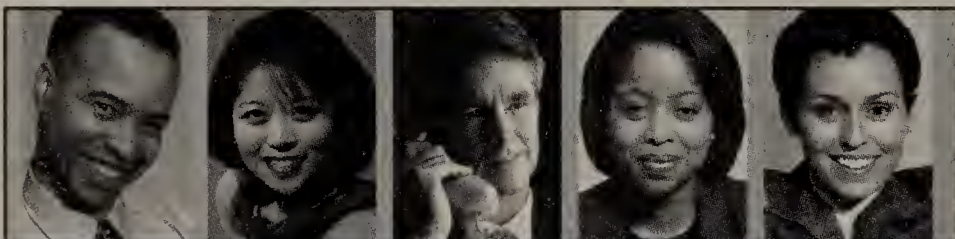
Seeking qualified applicants for the following positions in Memphis/Collierville, TN: **Senior Technical Analyst**. Research, evaluate, implement and coordinate changes to computer systems/applications. Requirements: Bachelor's degree* or equivalent in computer science, math, engineering or related field plus 5 years of experience in systems/applications development, including programming. Experience with Java, Jkarta Struts architecture and WebLogic application server technology also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

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Sr. Computer Security Engineer sought by network security device manufacturer in Broomfield, CO to work in Broomfield and other unanticipated job sites in the U.S. to, at a senior level, research, evaluate, recommend and implement high-end, fault-tolerant data communications networks that utilize TCP/IP protocol, routers, switches and Checkpoint firewalls. Develop procedures for installation, use, and problem solving of data communications networks, addressing customer requirements and security issues. Assist users to identify and solve data communication problems. Oversee installation of data communication and networking hardware. Engage in project management as required. Requires master's or foreign equivalent in computer science or related field including telecommunications engineering; 1 yr exp implementing high-end, fault tolerant data communications networks that utilize TCP/IP protocol, routers, switches and checkpoint firewalls; CCSE and MCSE certifications. M-F; 8am-5pm; \$108,000/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to JON CO5068585.

Network Eng to design, install, & maintain computer networks using Foundry, ServerIron XL switches, Cisco 2500, 4000 & 7200 router, Cisco 2950/3550 & HP Procurve switches, Cisco PIX 515, Sangoma TI cards, Netscreen, TCP/IP, Subnetting, DNS, SNMP, GP4, RIP, OSPF, SMTP, DHCP on Linux, Sun & Win. Platforms; consulting on network design/ arch.; network security through firewalls/ IDS; administer email servers in MS Xchange & qmail; disaster recovery; troubleshoot servers on various operating sys.; design high availability clusters on diff. platforms for provide max. uptime. Comp. Salary. BS in Electronics Eng. Or equiv. + 2 yrs. exp. in job duties. Apply to: Vertex Soft, Inc., 2 Lavender Drive, Princeton, NJ 08540 with proof of perm. Work authzn.



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IT Professionals needed. Bristol, PA company is seeking qualified candidates for several senior and mid-level positions including: Software Engineers, Programmer Analysts, IT Business Managers. Requires MS/BS or equivalent and/or rel. work exp. Email res., ref. & sal. req. to: resume@suryasys.com

COMPUTER SOFTWARE ENGINEER for North Bergen based telecommunications co. to develop, create and modify applications software and specialized utility programs. Min. req. BA + 4 yrs. exp. in telecommunications industry. Send resumes to Tele Express Telecommunications XII, 7800 River Road, North Bergen, NJ 07047.

Computer Operations Manager - Hallandale, FL. Plan, evaluate, develop and implement customer service and Call Center projects to companies interested in the Hispanic and Latin American market. Diagnose and design telecommunications, networks and VOIP software & hardware for E-1 systems. Control operational budget and expenditures. Manage, maintain and expand IT disaster recovery and contingency plans Firm wide. Knowledge of Hispanic/Latin markets & Spanish preferred. BS Electrical Engineer or equivalent plus 2 yrs exp in job offered. Fax resume to Viga Corp. attn: Human Resources at 954-455-5858.

National Amusement Network, Inc. seeks Senior Java Developer to work in Fort Collins, CO. Provide direction and technical assistance to team of Java developers engaged in designing and developing embedded software systems for automated coin-operated equipment and customer interfaces using open source software. Requirements include Bachelor's in computer science or closely related field; working knowledge of designing and developing embedded software systems and customer interfaces for coin-operated equipment using open source software. Java certified programmer, such as Sun certified programmer for Java. Respond via resume to Steve Benoit, NANI, 1133 Laporte Ave, Fort Collins, CO 80521, referring to #4790HZ.

Software Engineer, Framingham, MA; Analyze, design, develop, test and customize client/server architecture using Oracle, VAO, DB2, JDBC, WAS, Silkperformerv, Team-site, XML, IBM Directory Server and Java. Provide Technical support. Req'd. Bachelors in Computer Science or Engineering or Math. 1 yr. exp. in job offered. 40 hrs/wk, 9:00am-6:00pm, Mon-Fri, \$65,000/yr. Mon-Fri. Submit two (2) copies of resumes in response to: Case #200203583, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st Fl., Boston, MA 02114.

Senior Software Engineer sought in Boston, Massachusetts area for development of internet based software for financial and administrative functions of healthcare organizations. Requirements are Bachelor's degree in engineering or the equivalent, and two years experience in VB/VBScript, Java/JavaScript, SOL Server, System Domain administration, HTML/XML, relational databases, IIS, networking, client/server, Nt4.0/2000, and Microsoft development tools. Send applications to Recruitment, Req. No. 2083, P.O. Box 1070, Burlington, Vermont 05402-1070.

Senior Developer to work w/ PM4CICS in Tampa, FL, to lead software development team in analysis/research of info to oversee, coordinate production, analysis, design, testing, training of computer software developed in Assembler, Cobol, C++ and Rexx on IBM mainframes, incl. CICS exits /enhancing product functionality. Req. B.S. in comp sci, info sys or rel field, (or equiv based on educ and/or exp) + 5 yrs exp in job offered or 5 yrs system programming exp w/ CICS Transaction Server/CICS related software. Resumes to: C. Longworth, CommerceQuest, Inc., 2202 N West Shore Blvd., Suite 600, Tampa, FL, 33607.

Senior Software Engineer (with Masters degree and 3 years experience or Bachelors and 8 years of experience) - Job entails and requires experience in design and development of commercial applications using DB2, Cobol, JCL, CICS and TSO/ISPF. Attractive compensation package. Send resume to Catherine Fanucchi, 65 Water Street, Norwalk, CT 06854.

Sr. Software Engineers needed at client sites to dvlp & test projects using C++, HP-UX, CORBA, Oracle, PL/SOL, XML, & IBM MO Series, integrating subsystems & analyzing & dvlpg systms providing product support & enhancements. Perform data migration, unit testing & integration testing. Send resume to: Global Consultants, Attn: Hireme, 25 Airport Rd, Morristown, NJ 07960.

Software Engineer, TX and at various client sites in US: Perform analysis, design, development, deployment of web based applications with JAVA/J2EE architecture; provide E-commerce solutions. Use JAVA, EJB, JSP, SERVLETS, XML, XSLT, JAXP, LDAP, Java Script & DHTML. Develop client side & Intranet applications. Req: Bachelors in Computer Science or related + 2 yrs in job or 2 yrs as Programmer Analyst for web-based applications. Mail resume to HR, Database Resources, Inc., 5700 Glenview Ln., The Colony, TX 75056.

SOFTWARE DEVELOPER wanted by remote monitoring system co. in Houston, TX. Must possess degree & exp. Respond by resume only to: HR Dept., M/A - #10, V Monitor, Inc., 10000 Old Katy Rd., Suite 100B, Houston, TX 77055.

Seeking DBAs & Oracle DBAs (\$70-75K), Oracle ProC Developers & Systems Analysts (\$84-86K) for various US locations. BS/BA in relevant field + 2yrs exp. Resume to Upp Business Systems, 3075 Highland Parkway, Downers Grove, IL 60515.

ENGINEER, ELECTRONICS/ SOFTWARE RESEARCH (Lincolnshire, IL), wanted by multinational electronics manufacturer with R&D Center and head office in Korea to conduct and report on research and testing on iris recognition technology. Must be fluent in Korean. Respond to Linda Walsh, HR Manager, LG Electronics USA, Inc., 2000 Millbrook Drive, Lincolnshire, IL 60069 or fax to 847-941-8200.

SOFTWARE ENGINEER (Lincolnshire, IL), experienced, wanted by US office of electronics manufacturer to develop company's e-commerce and transport warehouse management systems. Must have knowledge of EXCEED, i2, WebMethods, WebServices, JAVA Servlets, J2EE, JSP, EJB, DB2/400. Respond to Linda Walsh, HR Manager, LG Electronics USA, Inc., 2000 Millbrook Drive, Lincolnshire, IL 60069 or fax to 847-941-8200.

Amtex provides high-quality end-to-end software solutions. We need IT professionals to develop software system, write SOR to load data from legacy system to PeopleSoft; use PeopleSoft Financials (GL, AR, AM, AP), Oracle, SOR, Cobol, SOL. Contact: info@amtexsystems.com. EOE.

Programmer/System Analysts, Software/Project Engineers wanted by Atserv, Inc. Minimum requirement is BS plus experience using Oracle, Visual Age, Visual InterDev. Position is long term. We sponsor H & green card. Competitive wage plus benefits. Apply at: murali@atserv.com. EOE.

Web/Database Application Developer. Create, maintain, and support Web/Database applications. Develop and maintain online store program. Design, develop and maintain company website. Bachelor's degree in computer science or in electrical engineering and two years related experience. Send resume to Chang-Sheng, Inc., HR Dept., 10641 Harwin Drive, Suite 502, Houston, TX 77036.

Computers - Programmer Analysts needed. Seeking qual. candidates possessing MS or equiv. and/or relevant work exp. Part of the req. relevant exp. must include 1 year working with Tuxedo & Tibco. Duties include: Design, develop & maintain software systems according to client specifications; Design & develop code instrumentation framework for online monitoring of OLTP system; Work with C/C++, Java, Unix, Informix, MQ, Tibco & DB2. Mail resume & ref. to: Object Solutions, Inc., Attn: HR, 3025 Harbor Lane, #312, Plymouth, MN 55447-5119.

Project Manager - Oversee installation of computer telecommunications integration systems at client sites. Obtain system acceptance at completion. Req'd: Bach. Deg. in Comp. Science, Business Admin., or Eng'g, 5yrs. exp. in the job offered, as a Systems Eng., or in a computer telecommunications integration occup. Must have exp. w/ LAN, WAN, PBX, & CTI. Must be fluent in Spanish & willing to travel extensively through out the US, Central, & S. America. Resume to: NICE Systems, Inc. 301 Rte. 17 N., 10th Fl., Rutherford, NJ 07070. Attn: Geraldine Farese.

Software Engineer - OmniPros, a worldwide provider of software solutions seeks motivated Software Engineers, Network Administrators/Engineers, IT Analysts, and Business Development/Technical Operations Management. Multiple Positions available in Chicago, IL and San Jose, Ca. Please email resume to careers@omnipro.com, fax resume to 408-944-0719, or mail resume to: OmniPros Ltd. 99 W. Tasman Drive, Ste 205 San Jose, CA 95134.

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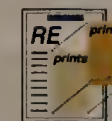
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Gamers

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Battlefield 1942 and Xbox Live has soared, professional-grade competitions have sprouted worldwide. And they pay cash prizes that are getting bigger every year.

The Cyberathlete Professional League (CPL), a tournament organizer, will award a half million dollars in cash prizes this year in the U.S., plus another \$100,000 internationally — and that doesn't include \$200,000 in merchandise prizes, says Angel Munoz, group president. He contrasts this booty with the CPL's first year, 1997, when the grand total was "maybe \$4,000 in merchandise."

The CPL is only one of a growing number of organizers hosting cash-rich tournaments. Microsoft's inaugural XSN Sports World Championship for Xbox players gave away \$30,000. This included a lump-sum \$25,000 won last month by David Muellerweiss, 19, of Chapel Hill, N.C.

With that kind of money circulating, a handful of folks have turned gaming from a pastime into a full-time living — and a darn good one, too.

Take Jonathan Wendel, for example. Better known by his screen moniker, "fatal1ty," Wendel is widely regarded as the first pro-gamer superstar. As three-time CPL Champion of the Year, he's won \$200,000 in the past four years, plus prizes such as his current car, a custom-painted Ford Focus ZX3. He also gets

paid for doing product endorsements and generates income from his newly founded company, Fatal1ty, which builds gaming gear.

Thanks to growing television coverage of tournaments — and the gamers themselves — fatal1ty's face is widely recognized. He's been featured on ESPN, USA Networks and The Discovery Channel, and starred in a four-month reality series on MTV. Add in the eight-hour-a-day training schedule and the public recognition, and by all accounts he's got the sports star life.

"It used to be that I could go around to malls unnoticed, but when I went out to clubs people knew who I was. Now a lot of times it's the moms at the store that stops me and ask for my autograph, not just the little 8 year olds," he says.

Looks like sport

Tournament organizers such as the CPL have begun pushing for computer gaming to be recognized as a bona fide sport in the U.S. — on par with other sports such as car racing or bowling. Munoz created the CPL with that goal in mind. "When I launched the CPL, the kindest reaction that I got from people was a smirk — everyone thought it was the most ridiculous thing they had ever heard — gamers as professional athletes?"

Not so anymore. Gaming already has become sanctioned as a sport in China, Korea, Russia and Malaysia. And why not? Gaming organizations already have all the attributes of other sports leagues, Munoz argues. "We didn't invent anything new as a sports league — we have the same structure," he says of the CPL's four methods to earn revenue: sponsorships, player fees, spectator admission tickets and television media contracts. "Are the [revenue] numbers comparable to existing sports in the world? No. But it's just a matter of time."

As for tournaments on television, organizers are serious about this, too. "They can be amazing competitions especially if it really goes down to the wire. If it's packaged up properly and presented well, it has good entertainment value," says Mike Lucero, Microsoft's Xbox Live tournament organizer.

The CPL already streams video coverage of its games on the Internet, says its network designer, Monte Fontenot. Plus, the league has recently negotiated a contract for coverage from a U.K. television producer that sells its videos to various cable channels.

Players give credibility to the idea of gaming as a sport. For instance, Wendel and Muellerweiss are accomplished football and baseball players, and Wendel is a champion billiards player.

While Muellerweiss admits that sitting in a chair is contrary to the notion of sports, he says "there are a lot of similarities. If you play a sport, you learn a lot about it and you can use your knowledge and strategy on your game." That plus practice



David Muellerweiss, right, winner of the XSN World Championship for Xbox players, shakes hands with basketball star Shaquille O'Neal.

and excellent hand-eye coordination are the critical pieces to win a professional computer tournament, he says.

Sponsors say the idea of computer gaming as a U.S. professional sport is gaining momentum. "There is more professionalism among the teams, including the addition of team managers, large team sponsorship contracts, and the teams getting somewhat of a celebrity status among non-professional gamers," says Linda Kohout, a marketing manager for chip maker Advanced Micro Devices (AMD), a major pro-game sponsor. "The prize money has also increased."

The payoff to sponsors is that gamers are demonstrators and buyers of state-of-the-art technology. "Cyberathletes are opinion leaders in gaming so it is important for AMD to develop relationships with the community," Kohout says.



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A network of controversy

But follow any money trail and you'll soon run into controversy. Putting on a professional tournament isn't just a matter of rounding up the prize money. So found Cyber X Games, best known for the tournament it organized at January's Consumer Electronics Show in Las Vegas. Organizers promised to give away more than \$150,000 in cash and prizes during the four-day event.

But Cyber X Games ran into network trouble with its Counter-Strike competition. While the details of the network's glitch are in dispute, Cyber X reportedly blamed the trouble on the distribution of a software patch to thousands of Counter-Strike participants. Others close to the situation said that the network outage was caused by a connection to the Internet that was too small, among other network design issues — which in turn was caused by weak event planning.

In any case, the network could not accommodate the number of matches it needed to run for the double-elimination tournament. Organizers cancelled the Counter-Strike matches and other games. They attempted to organize exhibition matches as a way to distribute the promised prize money, but technical — and, some say, organizational — problems continued. Questions remain over what exactly happened to the money. Cyber X President Joe Hill isn't talking, and several sources confirm that legal action against the company is underway.

All of which underscores just how serious computer games have become. ■

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Compellent

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types of disks based on user-set rules.

- Data Instant Replay, which lets users recover data within minutes.
- Remote Instant Replay, which lets users replicate data to or from distant locations.

Storage Center will compete with mid-range EMC Clariion, HP StorageWorks and IBM TotalStorage Fast products. Unlike those products, customers don't have to buy separate software to manage their storage. The product also is differentiated from existing arrays in that it has both Fibre Channel and iSCSI connections so users can attach it to a SAN or Gigabit Ethernet network. Storage Center also lets users mix and match drive sizes and speeds.

Carla Hedding, network administrator with accounting firm Wolf Etter in Mankato, Minn., chose Storage Center when she moved from server-attached storage to a storage-area network (SAN). While installing Storage Center, Hedding underestimated the amount of storage space she needed. When she went to bring up the system, it failed. She added more drives and then restored data.

"In our old environment if the servers failed, backup from tape would have taken days," Hedding says. "With Compellent's Data Instant Replay, we were able to roll back and restore the data within a couple hours."

Analysts say Storage Center will simply customer choices.

"Compellent is giving customers a lot of options and functionality without having to make a lot of hard technology choices," says Peter Gerr, senior analyst for the Enterprise Storage Group.

"With the Compellent box, customers don't have to integrate connectivity, software functionality and hardware themselves," Gerr says. "Rather than buying a disk array with absolutely no software and having to integrate separate software packages, Compellent applications can be simply turned on in the system."

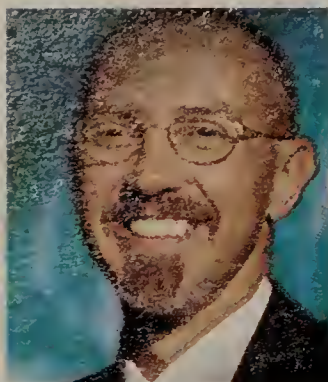
The Storage Center starts at less than \$30,000. Applications such as Data Instant Replay start at less than \$10,000 each. ■



Storage

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BackSpin Mark Gibbs



Fighting spam: My theory (Part 2)

Last week I started to outline what I see as the only way to cure the spam problem for consumers and businesses. My plan requires a mechanism for the e-mail recipient to be able to verify the sender, to some level.

You could set the minimum level of verification for people who aren't on your whitelist as requiring proof that the sender exists or, if you are a little more picky, that you must know the sender's identity before you will accept his messages.

Or you might require that the sender be vouched for by an institution. Banks and credit card companies, for example, could issue certificates to customers that present credentials (such as drivers license, major credit card and Social Security number). The issuer then would provide the certificate details to install in an e-mail client or, if the issuer is going to sign messages on behalf of its customers, provide details of the proxy server.

Certificates also could be portable — get a bank account and the bank will accept the certificate from your insurance company. The bank would test the certificate's validity and then be added to the list of certificate references. If we can verify the sender's identity and his sponsors then we can get a good idea if he should be trusted.

If you think a sender is a spammer, you should be able to send the message to the abuse desk at the certificate authority, which would route the complaint to the certificate issuer. The issuer would act according to its published policy, perhaps by removing itself as a reference or, if its policy lets it actually control the certificate, revoking or suspending it.

On the other hand, that wouldn't be necessary because you would just add the sender to your blacklist. If you got spam from lots of senders who were sponsored by, say, FlyByNight Enterprises, then you could refuse messages from anyone with a certificate issued or referenced by that company.

Could this system be hacked? Probably. Would such a hack be effective for long? No, because the system would be flexible and could accommodate and overcome faults. It wouldn't be centralized or owned by a single entity, and if there were enough certificate authorities and enough sponsors, there would be no single point of failure.

So how to bootstrap this proposition. If a consortium of interested parties (e-mail product developers, businesses, government, consumer groups — all interested because spam is causing them real financial problems) were to back such a scheme, it probably would be easy to get an open source development program going and effect a change-over to authenticated e-mail in perhaps a year. And

remember, not everyone needs to use it. Aunt May can still send you messages; you just have to be willing to accept them.

Now there are lots of issues here about the way certificates could be used and revoked, but the point is that we're using existing infrastructure and well-tested technologies, and not relying on ISPs to build and manage infrastructure they have no real need for and can't afford to build and manage anyway. Moreover, we're giving all the interested parties — consumers, businesses and institutions — a business reason to support the system.

But hold hard! You might have noticed a few news items discussing Bill Gates' proposal for an e-mail caller ID system, which has the backing of Amazon.com, Brightmail and Sendmail. At the RSA 2004 Conference, Gates talked about what Microsoft calls "rich safe-listing." Gates said in his speech: "Having e-mail come in, and not really being able to identify where it comes from, this is a huge security hole."

Right on! But let's not get over-excited, folks — this is just a mechanism to prevent domain spoofing (see details at www.nwfusion.com, DocFinder: 9945), not a real sender-authentication system. On the other hand, at least there's a chance we'll get on the right track.

Valid messages to backspin@gibbs.com.



Net Buzz News, insights, opinions and oddities

By Paul McNamara

Let's talk about punishment

You've probably seen the Southwest Airlines commercial in which an office worker unintentionally unleashes an e-mail virus and then stands in astonishment as her negligent act comes crashing down — audibly, no less — on a sea of fellow cubicle dwellers.

"Wanna get away?" is the ad campaign's familiar kicker.

What if instead of hopping a jetliner to escape her embarrassment, the woman had to cancel previously made flight reservations because her employer was about to punish her irresponsibility by rescinding the only five vacation days she had left?

Wanna get away? . . . Next time, resist the temptation to open that attachment. You attended the company's mandatory anti-virus training course. You signed the form attesting that you understand what you should and shouldn't open when working at your company-issued desktop — and you are fully aware of the consequences for non-compliance. Now go home, unpack your suitcase, explain to the family why you can't go on vacation, and be here Monday morning ready to do your job without keeping others from doing theirs.

Buzz can be a hard-ass from time to time. We're talking here about punitive measures — consequences — the stick half of that much-ballyhooed carrot-and-stick combination that has served management well for eons when trying to change the behavior of otherwise intractable human beings. Perhaps I'm just reading the wrong publications, but it seems as though discussion of sticks has been conspicuously lacking from the MyDoom stories and opinion columns that unfailingly lament the unwillingness and/or inability of end users to heed their IT advisers and cut it the heck out.

Whuppin' stick anyone?

Perhaps this is already happening in no-nonsense workplaces. Perhaps it's

been considered — or tried — and rejected elsewhere. Maybe punishing people for their promiscuous attachment to attachments is plain beyond the pale. I honestly don't know . . . and look forward to hearing from those of you who do.

But if these virus outbreaks are actually costing companies as much as experts say they are — thousands, tens of thousands, millions of dollars at a clip — shouldn't sticks be on the table, too?

By way of comparison, corporate America decided that legal liability from sexual harassment lawsuits was simply too great to limit prevention strategies to education and cajoling. People now get fired for that sort of thing every day. If they didn't, you'd still see the office clown e-mailing dirty jokes companywide . . . and pinups on workplace walls.

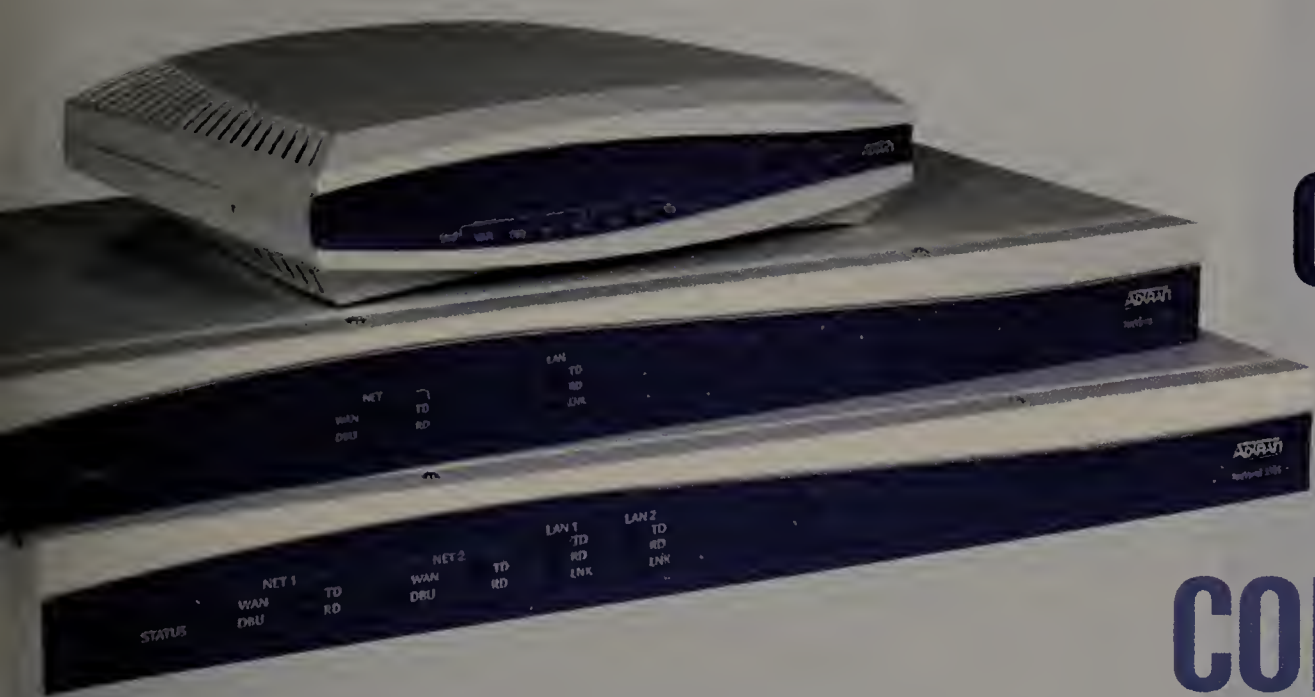
I'm not suggesting anyone get fired over aiding the spread of MyDoom or even that they lose so much as a single day's pay. Let the punishment fit the crime. If revoking vacation privileges isn't the answer, I'm sure the bright minds of American industry can conjure up one that is effective and fair.

After all, there seems to be a consensus that education efforts and technological advances have taken the anti-virus fight only so far and are unlikely to ever be enough.

The objections are not difficult to imagine, so allow me to tick off a few:

- We can presume that such a policy would be as unpopular as yanking the free coffee out of the company cafeteria.
 - Unions will not be amused — you can almost hear the guffawing of labor leaders at the mere suggestion of holding their memberships accountable?
 - What happens when it's the CIO or CEO who screws up? Who gets to send the boss to the penalty box?
 - And not all viruses are created equal. What if the next one is so clever that even *Network World* readers are fooled into infecting their own networks?
- Hey, I never said this would be painless.

Want to whack the columnist? Address is buzz@nww.com.



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